US-EN - English

Instructions for installation and operation

Data logger

METPOINT® BDL compact

10-110

Dear customer,

Thank you for deciding in favor of the METPOINT® BDL compact. Please read these installation and operating instructions carefully before mounting and starting up the device and follow our directions. Perfect functioning and safe operation of the BDL can only be guaranteed when the provisions and notes stipulated here are strictly adhered to.

1 Pictograms and symbols

General danger symbol (danger, warning, caution)

General note

Observe the installation and operating instructions (on the type plate)

Observe the installation and operating instructions

2 Signal words in accordance with ISO 3864 and ANSI Z 535

Danger!	Imminent hazard Consequences of non-observance: serious injury or death
Warning!	Potential hazard Consequences of non-observance: possible serious injury or death
Caution!	Imminent hazard Consequences of non-observance: possible injury or property damage
Notice!	Potential hazard Consequences of non-observance: possible injury or property damage
Important!	Additional advice, info, hints Consequences of non-observance: disadvantages during operation and maintenance, no danger

3 General safety instructions

Please check whether or not these instructions correspond to the device type.

Please adhere to all advice given in these operating instructions. They include basic information which needs to be observed during installation, operation and maintenance. Therefore, it is vital for the technician and the responsible operator/qualified personnel to read these operating instructions prior to installation, start-up and maintenance.

The operating instructions must be accessible at all times at the place of application of the METPOINT® BDL compact.

In addition to these operating instructions, local and national regulations need to be observed, where required.

Ensure that operation of the METPOINT® BDL compact only takes place within the permissible limit values indicated on the type plate. Any deviation from these limit values involves a risk for persons and for the material, and may result in malfunction or a service failure.

If you have any queries regarding these installation and operating instructions, please contact BEKO TECHNOLOGIES.

Warning!

Risk of injury in the event of insufficient qualifications!

Improper use can lead to significant personal injury and material damage. All of the activities described in these operating instructions must only be carried out by qualified personnel with the qualifications described hereinafter.

Qualified personnel

Due to the specific training and knowledge concerning the measuring and control technology, and due to their experience and knowledge of the country-specific provisions, standards in force and directives, qualified personnel are capable of carrying out the described work and of independently identifying the possible risks.

Special employment conditions require further corresponding knowledge, e.g. regarding aggressive media.

Caution!

Malfunctions of the BDL compact

Through incorrect installation and insufficient maintenance, malfunctions of the BDL may occur. These can affect the indications and lead to misinterpretations.

Danger!

Inadmissible operating parameters!

Under-running or exceeding the limit values involves risks for persons and the material, and malfunction and service failures may occur.

Measures:

- Make sure that the METPOINT® BDL compact is operated only within the permissible limit values that are indicated on the type plate.
- Exact compliance with the performance data of the METPOINT® BDL compact in connection with the case of application.
- Do not exceed the permissible storage and transport temperature.

Further safety advice :

- During installation and operation, the national regulations and safety instructions in force also need to be observed.
- The BDL must not be employed in hazardous areas.

Additional instructions:

- Do not overheat the device!

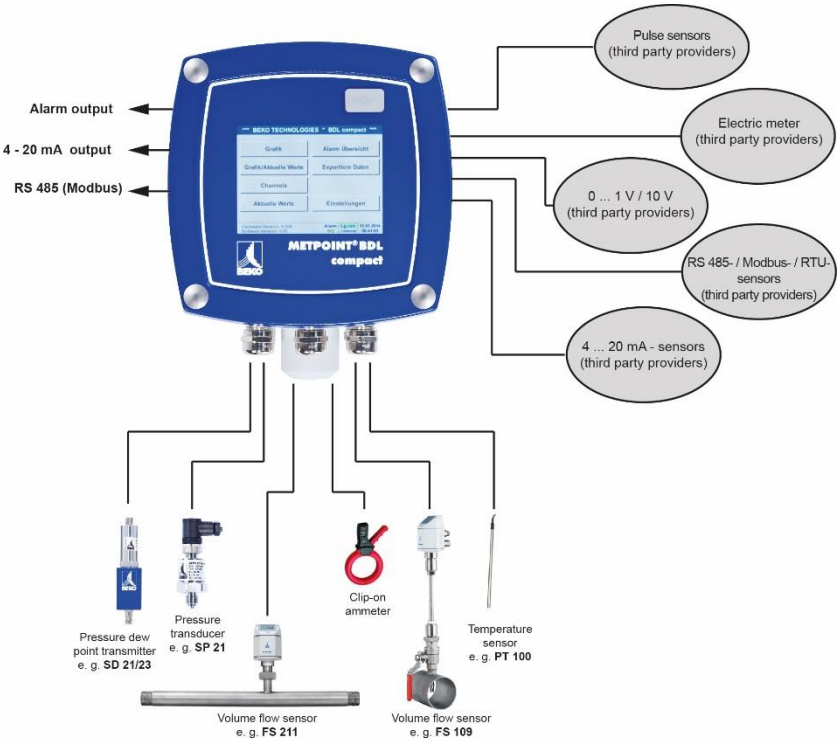
4 Performance characteristics

Our longstanding practical experience in measuring and control technology was implemented in the new METPOINT® BDL compact.

Stretching from the measuring data acquisition and automatic sensor identification via the visualization on the large color display, alarm signal, and storage, to the remote readout via web server – all of this is possible with the METPOINT® BDL compact. An alarm message can be sent via SMS or e-mail in connection with the BEKO SW201software.

With the 3.5" color display with a touch panel, all of the information is visible at a glance. Operation is very easy. All the measured values, measured curves, and exceeded limit values are displayed. With a simple finger movement, the curve courses can be tracked from the start of the measurement.

The big difference to standard, paperless graphic display recorders is reflected in the simplicity of the start-up and in the measuring data evaluation. All of the sensors are directly identified by the METPOINT® BDL compact, and they are provided with voltage. Everything is ideally matched.



Multifunctional:

The METPOINT® BDL compact identifies up to four sensors including all BEKO sensors (consumption, dew point, pressure, current, KTY, Pt100, Pt1000).

Any analog sensors (0/4 – 20 mA,

0 – 1/10/30 V), pulse) can easily and quickly be configured.

Digital sensors can be connected via RS 485, Modbus RTU and SDI.

Flexible:

Network-compatible, and remote data transmission worldwide via Ethernet, integrated web server.

Alarm relay/trouble indications:

Up to 4 limit values can be freely configured and assigned to 2 different alarm relays. Collective alarms are possible.

5 Proper use

The **METPOINT® BDL compact** data logger serves for the **stationary measured data acquisition and storage** of analog and digital input signals.

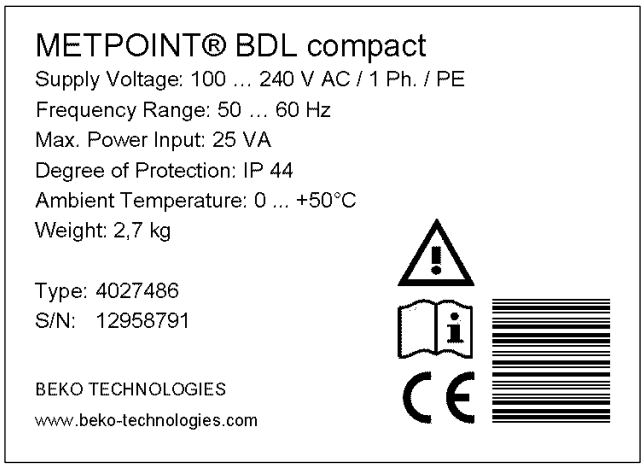
The **METPOINT® BDL compact** data logger is exclusively designed and constructed for the proper application purpose that is described herein and must only be used correspondingly.

A check in order to ascertain whether or not the device is suitable for the chosen employment must be carried out by the user. It must be ensured that the medium is compatible with the components which come into contact with it. **The technical data listed in the data sheet are binding.**

Improper handling or operation outside the technical specifications is impermissible. **Claims of any kind on the basis of improper use are excluded.**

6 Type plate

The type plate is on the housing. It includes all the important data regarding the METPOINT® BDL data logger which must be communicated to the manufacturer or supplier upon request.



Note:
Never remove, damage, or obliterate the type plate!

7 Storage and transport

Despite all due care and attention, transport damage cannot be excluded. Therefore, check the METPOINT® BDL compact for possible transport damage subsequent to transport and removal of the packaging material. The forwarding agent and BEKO TECHNOLOGIES or the BEKO TECHNOLOGIES agency shall be informed immediately about any kind of damage.

Warning!

Overheating!

Overheating will destroy the evaluation unit. Observe the permissible storage and transport temperature, as well as the permissible operating temperature (e.g. protect the measuring device against direct sunlight).

Warning!

Damage possible!

Damage may occur to the METPOINT® BDL compact through improper transport, storage, or use of unsuitable lifting tools.

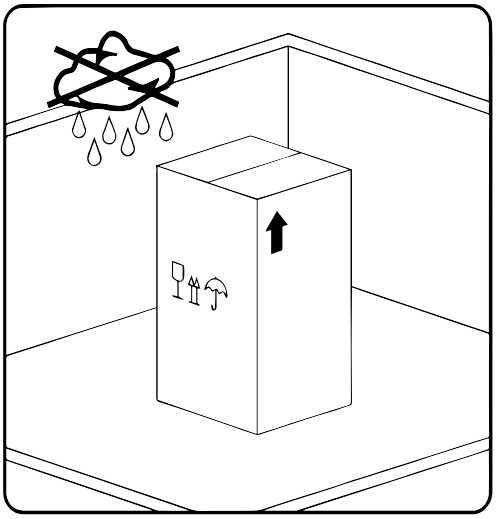
Measures

- The METPOINT® BDL compact must only be transported or stored by authorised and trained skilled personnel.
- Only use suitable and technically sound lifting tools for the transport.
- In addition, observe the respectively valid regional provisions and directives.

Caution!

Danger through damaged components!

Do not start-up a damaged METPOINT® BDL compact. Defective components can impair the operational reliability, falsify the measuring results, and cause further damage.



Store the METPOINT® BDL compact in its original packaging in a closed, dry, and frost-protected room. The ambient temperatures must not exceed/underrun the values indicated on the type plate.

Protect the device against atmospheric influences even when packaged.

The METPOINT® BDL compact must be protected against tilting-over, falling, and vibrations at the place of storage.

8 Technical data BDL compact

Technical data	
Color display	3,5“ Touch panel, TFT transmissive
Supply voltage [1)]	100 … 240 V AC 1Ph. / PE 50 … 60 Hz
Network connecting lead [2)]	Max. cladding diameter: 0.26 inch, AWG 18 with a safety plug and PE protective grounding
Max. power consumption	25 VA
Supply voltage for the sensors	24 V DC (± 10%)
Output current analog board	120 mA in all for both channels
Output current digital board	120 mA in continuous operation / channel
Max. output current across all channels	280 mA
Ambient temperature during operation	32 … +122 °F
Storage and transport temperature	-4 … +158 °F
Ambient humidity	0 … 95%, non-condensing
Degree of protection [3)]	IP 44, EN 60529
Lithium manganese dioxide battery [4)]	Panasonic CR2032
Connections	7 pieces – threaded cable connection **M12 x 1.5** Body: nickel-plated brass, Clamping zone: 0.12 -0.28 inch, SW=16 mm Torque: **8 Nm** 1 piece **RJ45** for the Ethernet connection
Interfaces	USB stick (USB 2.0) Ethernet interface, Modbus TCP RS485 interface, Modbus RTU SDI interface (Serial Data Interface)
Sensor inputs	4 (2x2) sensor inputs for analog and digital sensors, freely assignable
Sensor signals [5)]	Analog signals: 0/4 - 20 mA, 0 - 1/10/30 V Pulse signals Pt100, Pt1000 Digital signals: RS485, BEKO-SDI

Technical data BDL compact

Technical data	
Alarm outputs (alarm relays)	2 pieces potential-free change-over contacts Freely programmable, alarm management
Analog output and pulse output	As regards sensors with an internal signal output, the analog output and pulse output are looped through, e.g. the FS/DP series
Data logger	4 GB memory card (micro SDHC class 4)
Housing materials	Housing: aluminum, powder-coated, Front foil made of polyester (anti-glare) 3M adhesive (3M7952 / 3M467)
Weight	5.95 lbs
Dimensions W x H x D	7.09 x 6.54 x 4.53 inch
Optional	Web server
Optional	Galvanically isolated pulse output (2x) max. 30V AV / 60V DC ; 250mA
Optional	Ethernet and RS485 interface Modbus protocol

1) Input voltage range: 85 … 264 V AC / 47 … 63 Hz / 1 Ph. / PE

2) Feeder **3 x 0.75 mm² (AWG18)** with a safety plug and PE protective grounding
Cable length **98.43 inch,** cable type **H05VV-F 3G0.75**
Connecting lead according to HD21.5, HD21.12 (VDE 0281-5, VDE 0281-12)

The lead complies with EC Regulations No. 1907/2006 (REACH) and No. 2002/95/EC (RoHS), and also with the EC Low-Voltage-Directive No. 2006/95/EC.

Two-pole plug with a grounding contact
Nominal voltage plug: 250 V
Nominal current plug: 16 A
Manufacturing guideline CEE 7 Standard form VII, VDE 0620

3) **IP 44 in accordance with EN 60529**

IP	International Protection
4	Protected against the access to dangerous parts with a wire, Ø 0.039 inch Protected against solid foreign particles with a Ø > 0.039 inch.
4	Protected against **splash water**

4)

Type:	Lithium manganese dioxide battery, Panasonic CR2032
Nominal voltage:	3 V
Capacity:	225 mAh
Max. continuous current:	0.2 mA
Diameter:	0.79 inch
Height:	0.13 inch
Weight:	0.10 oz
Operating temperature:	-22 … +140 °F

5) **BEKO sensors**

Digital **BEKO** sensors for the pressure dew point with an RS485 interface, series: DPM SD23

Digital **BEKO** sensors for the dew point and consumption with an SDI interface,
series: DP 109, DP 110, FS 109, FS 211

Analog **BEKO** sensors for the pressure, temperature, clip-on ammeter pre-configured

Sensors with analog signals: 0/4 – 20 mA, 0 - 1/10/30 V, pulse, Pt100, Pt1000

CE conformity [1]	
EMC Directive	2004/108/EC
Low-Voltage-Directive	2006/95/EC
ROHS II Directive [2]	2011/65/EU
EMC interference immunity, **industrial field**	EN 61326-1 & EN 61326-2-3
EMC interference emission, **group 1, class B**	EN 61326-1
Safety provisions for electrical equipment for measurement, control, and laboratory use	EN 61010-1

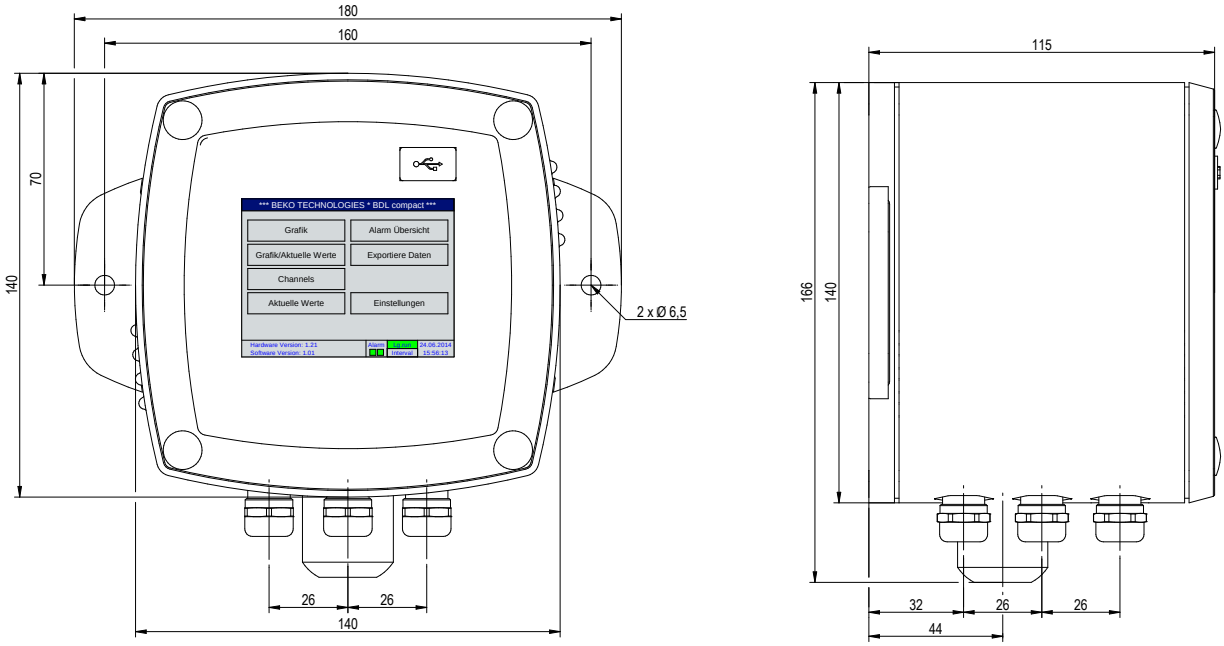
1) CE labelling according to the 2006/95/EG Low-Voltage-Directive

2) The provisions of Directive 2011/65/EU on the restriction of the use of certain hazardous sub stances in electrical and electronic equipment are complied with.

9 Dimensions

The device can either be integrated into an equipment cabinet or fixed on the wall using suitable dowels and screws. Details can be found in the following drawings.

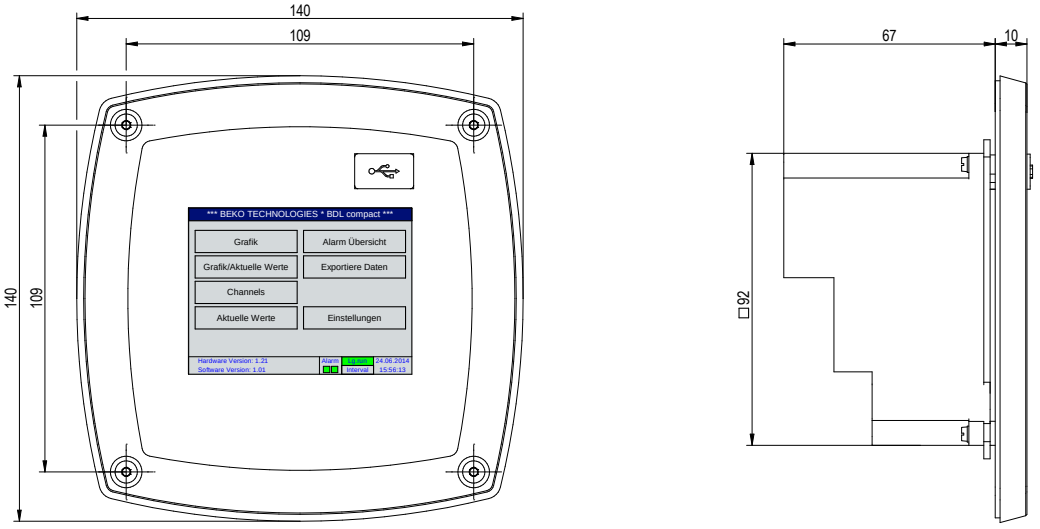
Dimensions for wall mounting



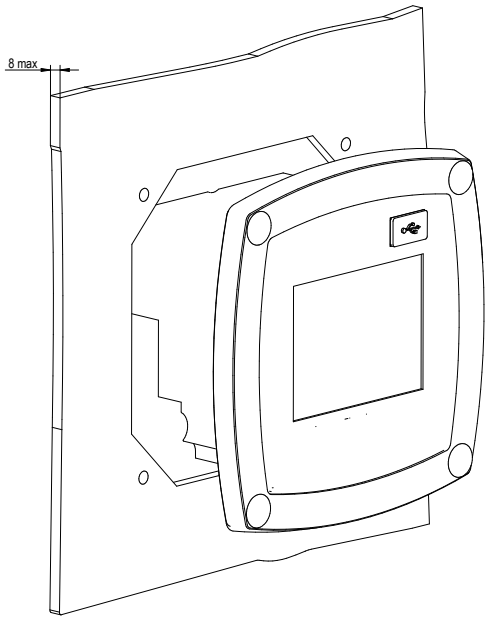
NOTE!

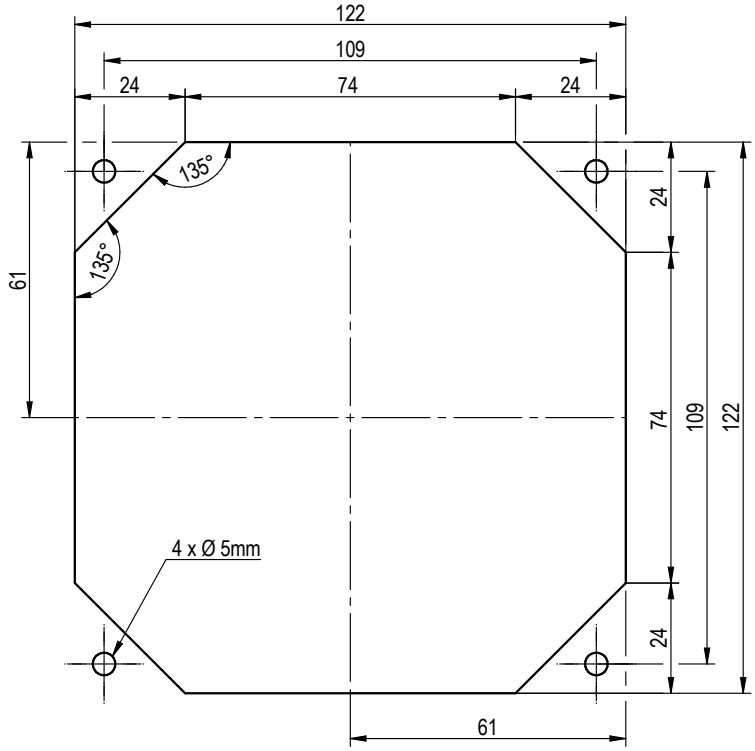
The wall mounting must withstand four times the weight of the device (23.81 lbs).

Dimensions for the mounting of the instrument panel



Cutout for the mounting of the instrument panel





10 Installation

10.1 Safety instructions

Danger!

Supply voltage!

The contact with non-insulated parts carrying supply voltage involves the risk of an electric shock resulting in severe injuries and death.

Measures:

- Observe all regulations in effect during the electrical installation (e.g. VDE 0100)!
- Any electrical works must only be carried out by authorised and skilled personnel.
- The connection to the electric mains and the corresponding protective equipment must comply with the legal provisions in force at the place of installation of the **METPOINT® BDL compact**; the connection and installation must be carried out by skilled personnel who are qualified accordingly.
- Make sure that no parts of the measuring devices are energized and that the measuring devices cannot be connected with the electric supply mains during service measures.

Danger!

Missing earth connection!

When the earth connection (protective earth) is missing, there is the risk in the event of malfunction, that contactable, conductive components may carry supply voltage. Touching of such parts leads to an electric shock with injuries and death.

It is imperative to connect the plant to earth or to connect the protective conductor according to the regulations.

Do not use plug adapters at the power plug.

Have the power plug replaced by qualified skilled persons, if required.

Danger!

Missing separator!

All voltages representing a hazard when coming into contact with them must be disconnectable via assigned separators that need to be installed externally.
The separator must be installed in the vicinity of the device.
The separator needs to correspond to IEC 60947-1 and IEC 60947-3.
The separator must separate all voltage-carrying conductors.
The separator must not be installed in the power supply line.

The separator must be easily accessible for the user.

The plug of the power supply cord is used as a separator. This separator must be clearly recognizable and easily accessible by the user. A plug connector with a CEE7/7 system is necessary.

All the electrical lines carrying supply voltage or another voltage that is dangerous in the case of contact (power supply cord, alarm and indicator relays), must additionally be equipped with double or reinforced insulation (EN 61010-1). This can be ensured by using plastic-sheathed cables, a second insulation (e.g. flexible insulating tubing), or correspondingly suitable lines with reinforced insulation.

The connecting cables can be equipped, for example, with flexible insulating tubing.

The additional flexible insulating tubing must withstand the electrical and mechanical stresses which can occur during the intended use (see EN 61010-1, Clause 6.7.2.2.1).

DANGER!

Supply voltage!

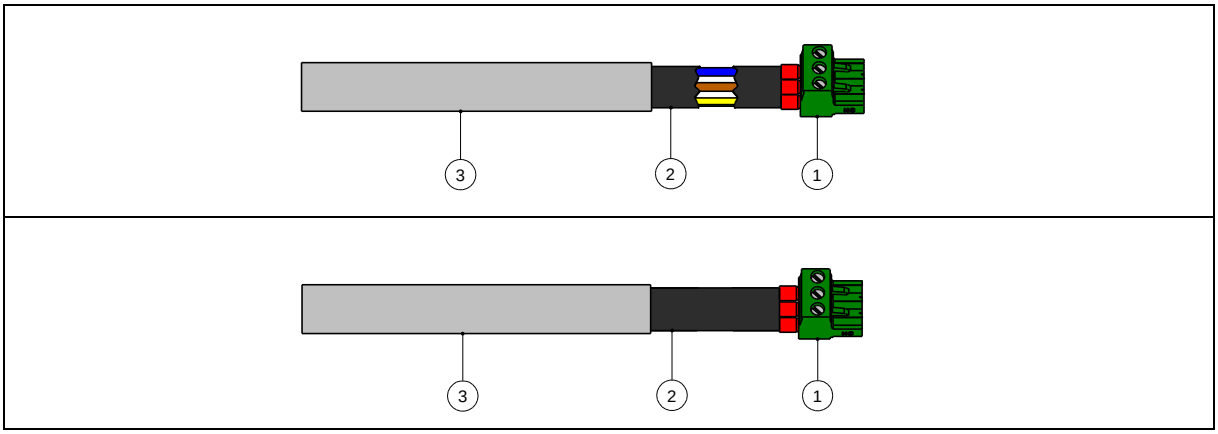
When wiring the connecting lead, it must be ensured that the double or reinforced insulation between the electric circuits that are dangerous in the case of contact and the contactable secondary circuit remains maintained.

NOTE!

The additional insulation must be suitable for a test voltage of 1500 V alternating current. The thickness of the insulation must be at least 0.016 inch.

E.g. **flexible insulating tubing, type BIS 85** (Bierther GmbH).

The additional insulation of the connecting leads (mains connection, alarm and indicator relays) can be implemented as follows:



(1) - Terminals (connectors)

(2) – Flexible insulating tubing for the connecting leads

(3) – Connecting cable

10.1.1 Prevention of electrostatic discharge (ESD)

Danger!

Damage through ESD possible

The device contains electronic components which may be sensitive to electrostatic discharge (ESD). The contact with electrostatically-charged persons or objects compromises these components. In the worst case, they are immediately destroyed or will fail subsequent to the start-up.

Observe the requirements stipulated in EN 61340-5-1 to minimize or prevent the possibility of damage through sudden electrostatic discharge. Please also make sure not to touch the electronic components while supply voltage is applied.

Basics

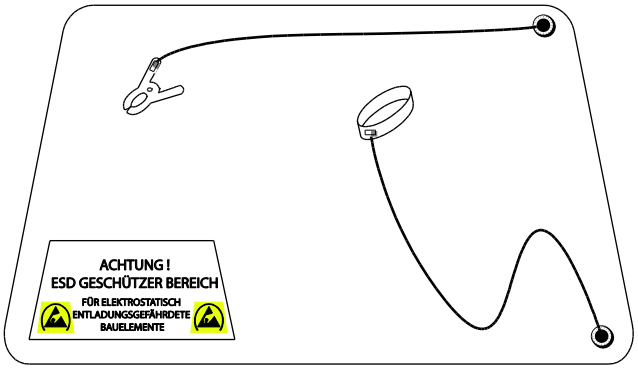
In order not to cause damage through incorrect handling during the intervention in electronic devices, the protective measures regarding the prevention of electrostatic charges need to be observed in compliance with the DIN EN 61340-5-1, IEC 63140-5, and DIN EN 100 015 standards.

Through this, the development of electrostatic discharges and the related damage to the device can be prevented.

Measures

As soon as the housing of the METPOINT® BDL compact is opened for service measures, the following protective measures must be undertaken und the corresponding protective media must be used.

- Use an ESD mat with an earth connection
- Use a wrist strap
- Discharge tools prior to using them by rubbing them over the ESD mat.



10.2 Instructions regarding the installation

10.2.1 Degree of protection through the housing (IP code)

The **METPOINT® BDL compact** data logger meets the requirements of the IP 44 degree of protection in accordance with EN 60529.

The degree of protection of a housing is defined by the IP code and a two-digit code number. The first digit includes the protection for persons and resources while the second digit only refers to the protection against water.

IP 44 in accordance with EN 60529

IP International Protection

4 Protected against the access to dangerous parts with a wire, Ø 0.04 inch
Protected against solid foreign particles with a Ø > 0.04 inch.

4 Protected against **splash water**
Water splashing against the housing from any direction must not have harmful effects.

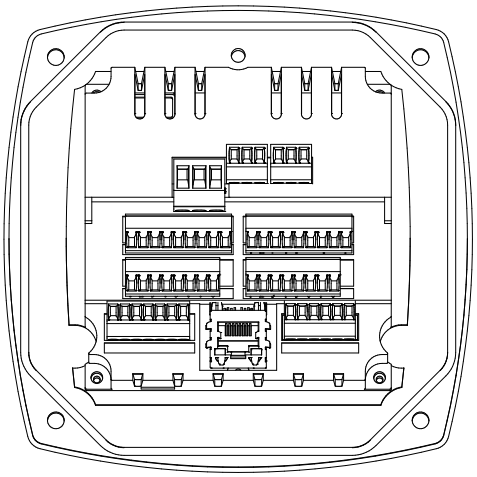
DANGER!
Subsequent to all installation and service measures at the data logger, the indicated degree of protection must be re-established and guaranteed.

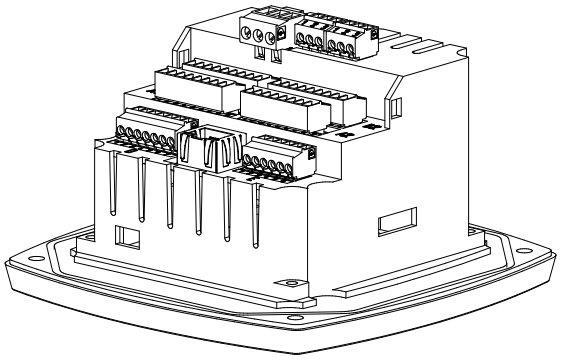
During the implementation of any works on the **METPOINT® BDL compact**, it is imperative to observe the following points:

- Use original seals only. These must be clean and free from any damage. Defective seals need to be replaced.
- The electrical connecting cables must be free from damage.
  The cables need to meet the requirements of the respective standards and provisions.
  Defective connecting leads need to be replaced immediately.
- The cables must be installed in the form of a loop in front of the measuring device in order to prevent water from entering the housing.
- Ensure that the cable glands are tightened firmly.
- Threaded cable connections which are not used, need to be closed with a blank plug.

11 Connection/terminal diagram METPOINT® BDL compact

View of the connecting plugs at the back of the device.





All of the connections at the back of the device are designed as pluggable screw terminal blocks. For the connection, the following needs to be observed:

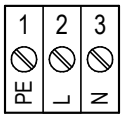
- Line cross-section for the power cable, plug C : 0.75 – 2.5 mm² / AWG12 - AWG24
- Line cross-section for alarm contacts, plug A / B : 0.14 – 1.5 mm² / AWG16 - AWG28
- Line cross-section for sensors : 0.14 – 1.5 mm² / AWG16 - AWG28

DANGER!

Supply voltage!

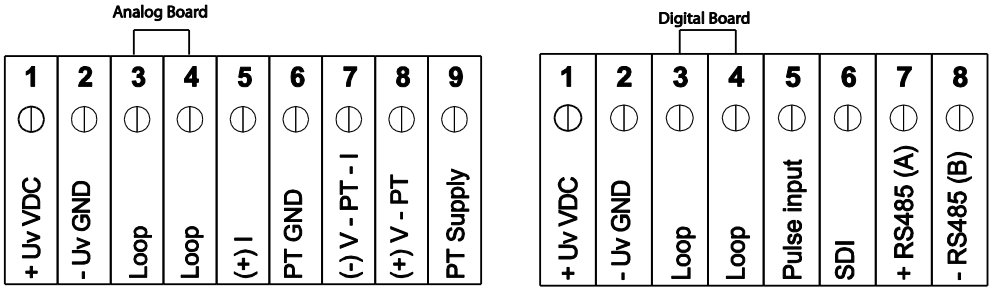
An incorrect connection during the installation works involves risks for persons and the material, and a malfunction of the BDL compact may occur.

11.1 Pin assignment plug "C" (supply voltage)

Input voltage range: 85 … 264 V AC / 47 … 63 Hz / 1 Ph. / PE	
Line cross-section: 0.75 – 2.5 mm² / AWG12 - AWG24	
 **C**	**1 = PE = protective conductor / earth** **2 = L = phase L** **3 = N = neutral lead N**

11.2 Pin assignment plug "A1 – B2" (analog and digital channels)

Jumpers are internally available on both boards



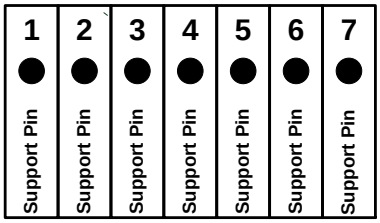
Depending on the selected version, the following combinations are possible:

Channel \ Combination	1	2	3	4	5	6
A1	D	D	D	A	A	A
A2	D	D	D	A	A	A
B1		D	A		A	D
B2		D	A		A	D

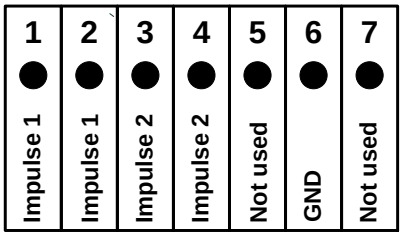
D = digital channel A = analog channel

11.3 Pin assignment connector "D" (galv. isolated pulse output/pulse transmission)

11.3.1 Basic version (support pulse transmission)



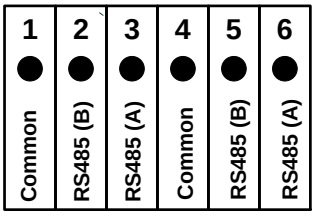
11.3.2 Option galv. isolated pulse



In systems with two digital boards (2x2 digital channels), only one pulse input respectively can be used for a pulse output.

A1 or B1 for pulse1 or A2 or B2 for pulse 2

11.4 Pin assignment connector "E" (RS485 -- Modbus)



11.5 Pin assignment Connectors "A – B" (alarm relay)

The alarm outputs are designed as potential-free change-over contacts. Via the potential-free contacts, the alarm signal can be transmitted, e.g. to a control centre. The connecting plugs of the alarm contacts are marked with **"A"** and **"B"**.

DANGER!

Supply voltage!

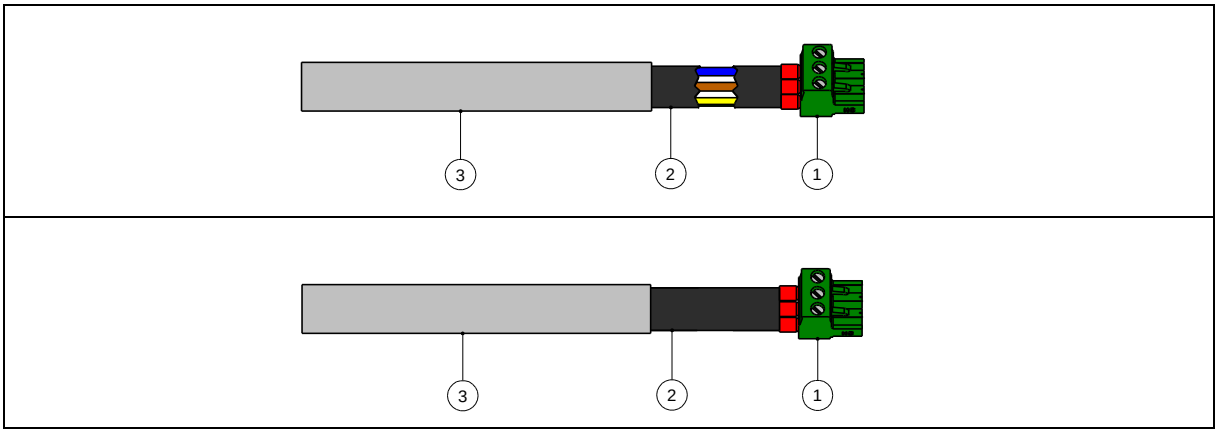
When wiring the electric connecting lead, it must be ensured that the double or reinforced insulation between the electric circuits that are dangerous in the case of contact and the contactable secondary circuit remains maintained.

NOTE!

The additional insulation must be suitable for a test voltage of 1500 V alternating current. The thickness of the insulation must be at least 0.016 inch.

E.g. **flexible insulating tubing, type BIS 85** (Bierther GmbH)

The additional insulation of the connecting leads (mains connection, alarm and indicator relays) can be implemented as follows:



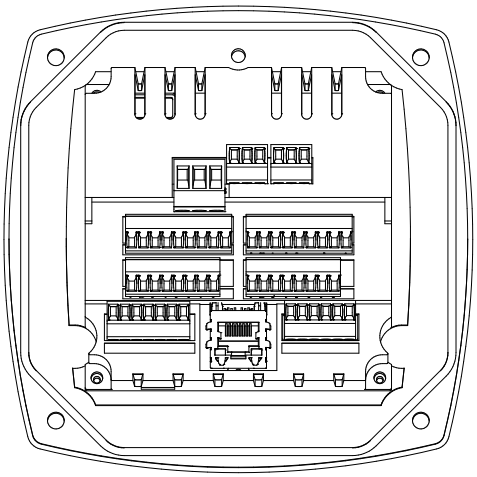
(1) - Terminals (Connectors "A" and "B")

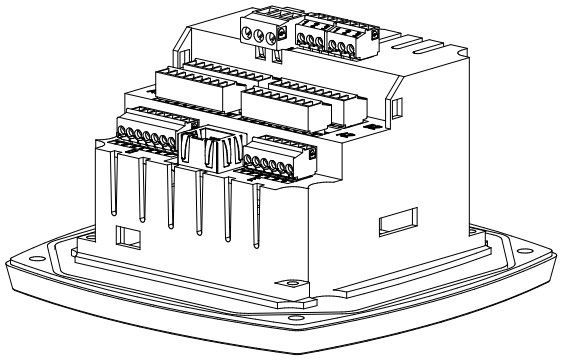
(2) – Flexible insulating tubing for the connecting leads

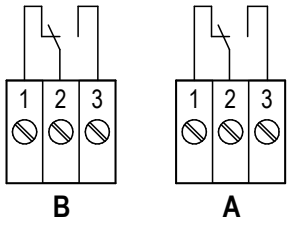
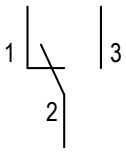
(3) – Connecting cable

Connection/terminal diagram METPOINT® BDL compact

View of the connecting plugs at the back of the device.





Potential-free alarm change-over contacts, connecting plugs A and B		
Line cross-section: 0.14 – 1.5 mm² / AWG16 - AWG28		
		1 = NC = Normally Closed 2 = COM 3 = NO = Normally Open

CAUTION!

NC (1) and COM (2) are closed during the following operating conditions:

- in the event of an alarm
- in the event of a sensor break
- in the event of a voltage breakdown

Load of the potential-free alarm contacts:

min. switching current	10 mA
max. switching voltage	250V AC / 30V DC
max. switching current (acc. to VDE)	3 A
Contact material	AgNi (silver nickel)

12 Connection diagrams of the different sensor types

As regards consumption and dew point sensors, there is the possibility to provide the measured values as an analog current signal 4 – 20 mA for further processing . In the connection diagrams, the collection of the current signal for an external PLC/central control system or for an external display is explained.

When using the connecting leads BEKO 4014064 or 4014065, the following pin assignment needs to be observed:

SD21	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6
Connecting plug	**+ U_V**	Not used	**+I_{OUT}**	Not used	Not used	Not used
Connecting lead 4025252 (16.4 ft)	brown		blue			

SD23 (4 - 20 mA)	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6
Connecting plug	**+ U_V**	Not used	Not used	**+I_{OUT}**	**- U_V**	**GND**
Connecting lead 4025253 (16.4 ft)	brown			white	blue	black

SD23 (0 - 10 V)	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6
Connecting plug	**+ U_V**	**+U_{OUT}**	GND	Not used	**- U_V**	Not used
Connecting lead 4025253 (16.4 ft)	brown	white	Black		blue	

SD23 (RS 485)	PIN 1	PIN 2	PIN 5	PIN 6	PIN 7	PIN 8
Connecting plug	**+ U_V**	Not used	**- U_V**	Not used	Bus A (+)	Bus B (-)
Connecting lead 4025253 (16.4 ft)	brown		blue		white	black

SP21/ SP61	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6
Connecting plug	**+ U_V**	Not used	**+I_{OUT}**	Not used	Not used	Not used
Connecting lead 4025252 (16.4 ft)	brown		blue			

SP22/SP62	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6
Connecting plug	**+U_V**	**GND**	**- U_V**	**-U_{OUT}**	Not used	Not used
Connecting lead on request	brown	black	blue	white		

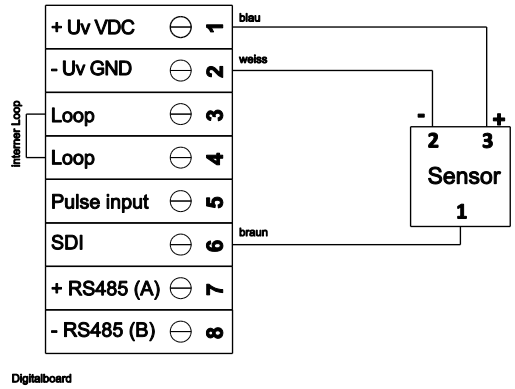
FS109 /FS211/ DP109	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6
Connecting plug	**SDI**	**- U_V**	**+ U_V**	+I (500 µA)	Not used	Not used
Connecting lead 4014064 (16.4 ft) 4014065 (32.8 ft)	brown	white	blue	black	grey	

Connection diagrams of the different sensor types

The following connection diagrams in Chapter 10 apply from A1 to B2!

DP/SD series: dew point sensors from BEKO TECHNOLOGIES
FS series: consumption sensors from BEKO TECHNOLOGIES

12.1 Connection dew point sensors DP 109 series

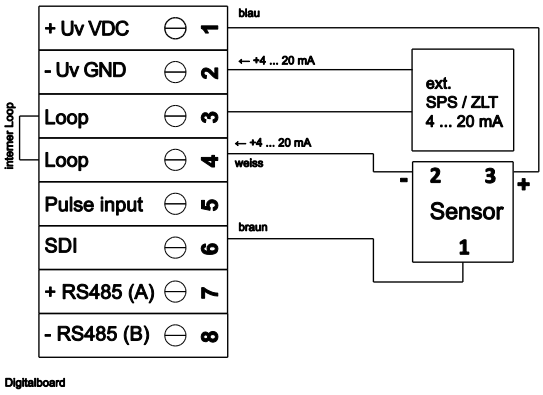


METPOINT® BDL compact

DP 109

The digital data transmission between METPOINT® BDL compact and the DP 109 dew point sensors is implemented via the SDI bus line.

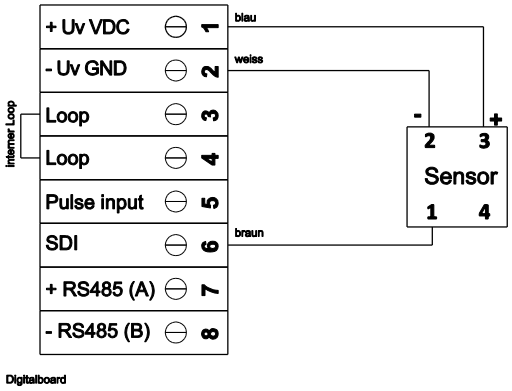
Alternatively, the user can use the DP 109 as a 4 – 20 mA analog sensor in 2-wire technology



METPOINT® BDL compact with an external transmission

Ensure that the electric circuit is closed in any case.

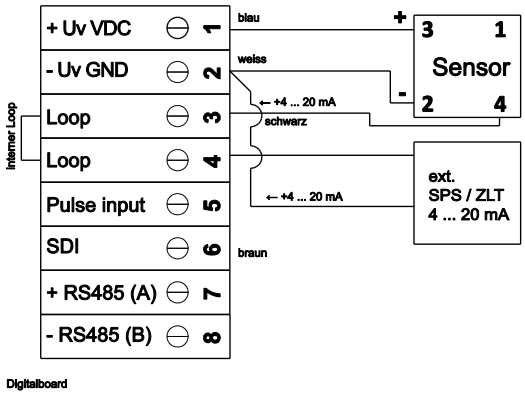
12.2 Connection consumption/dew point sensors DP/FS series



METPOINT® BDL compact

DP 110
FS 211
FS 109

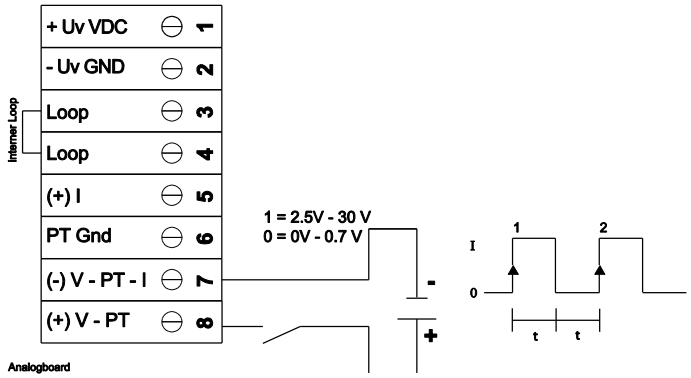
The digital data transmission between the METPOINT® BDL compact and the sensors DP 110, FS109, and FS 211 is implemented via the SDI bus line.



METPOINT® BDL compact with an external transmission

Ensure that the electric circuit is closed in any case.

12.3 Connection pulse sensors



Signal level 0:
low = 0 – 0.7 VDC

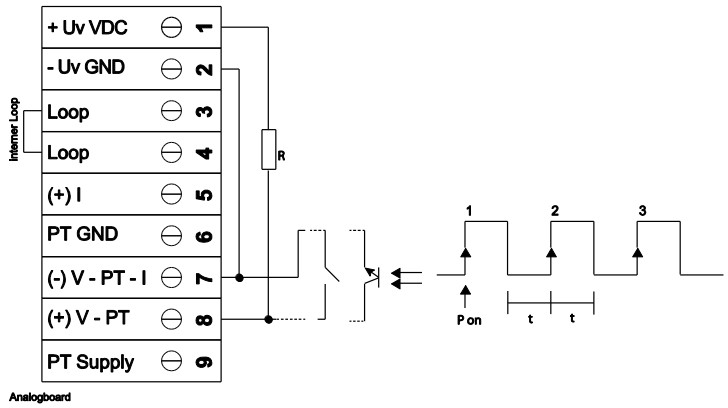
Signal level 1:
high = 2.5 – 30 VDC

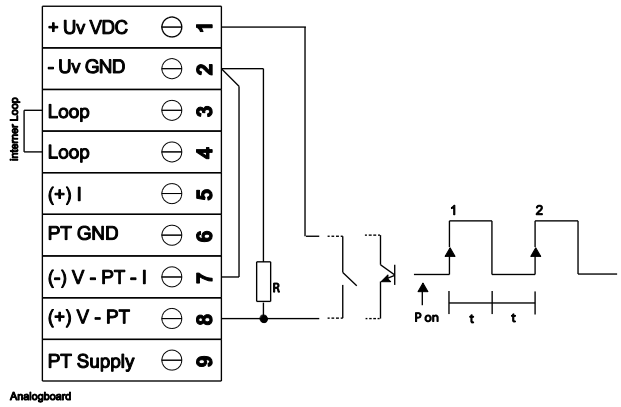
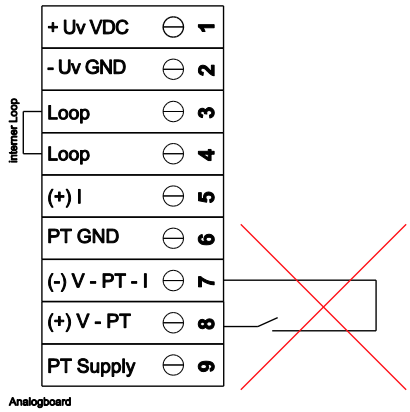
t = 400 µs

max. frequency
(pulse duty factor 1:1) = 1000 Hz

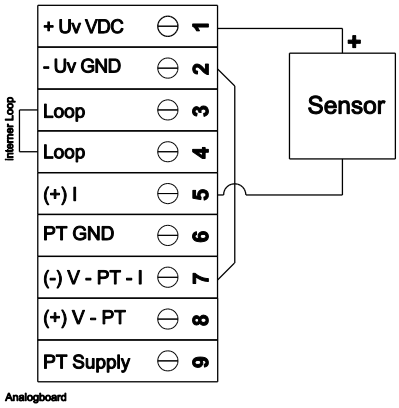
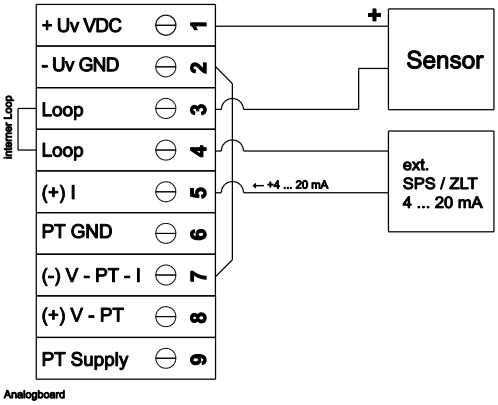
Input resistance:
min. 100 kOhm

Connection diagrams of the different sensor types

<table>
<tr>
<td> 
</td>
<td>Externally required
R = 4K7

<u>Caution:</u>
Counts one unit of consumption when switching on the
METPOINT® BDL compact</td>
</tr>
<tr>
<td> 
</td>
<td>Externally required
R = 4K7</td>
</tr>
<tr>
<td> 
</td>
<td>Connection impossible!</td>
</tr>
</table>

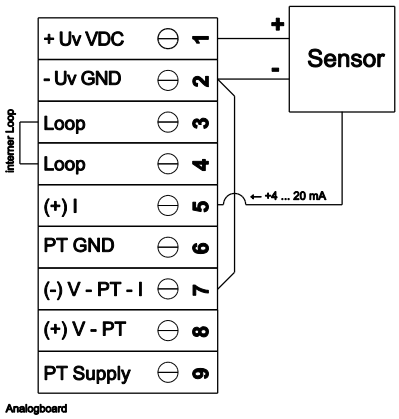
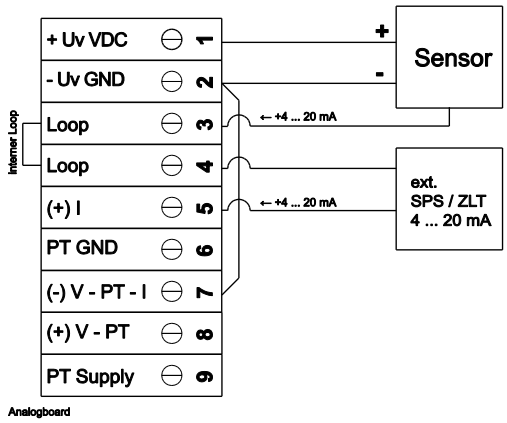
12.3 Analog 2-wire, 3-wire, and 4-wire current signal

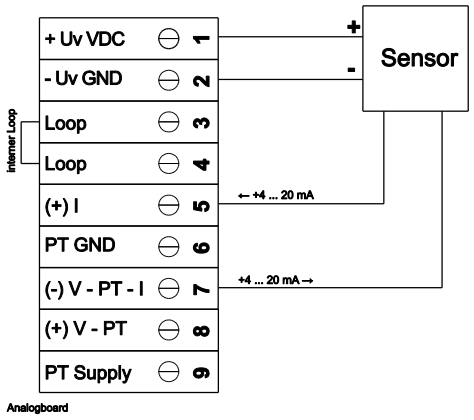
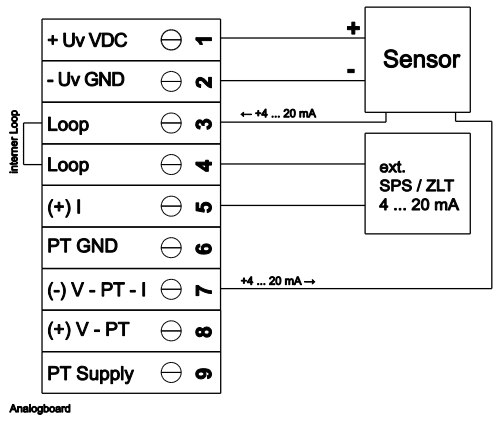
<table>
<tr><th colspan="2">Sensors with 4 - 20 mA output in 2-wire technology</th></tr>
<tr><td> 
</td><td>METPOINT® BDL compact</td></tr>
<tr><td> 
</td><td>METPOINT® BDL compact with an external transmission

Ensure that the electric circuit is closed in any case.

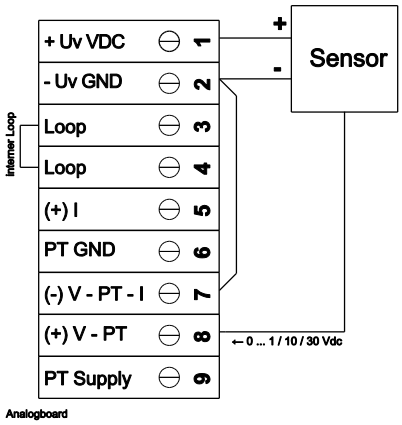
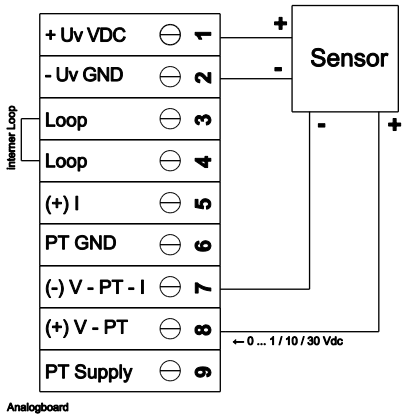
(e.g. pressure sensors 1.6/16/40/100/250/400 bar or temperature sensors with an integrated transducer 4 - 20 mA)</td></tr>
</table>

Connection diagrams of the different sensor types

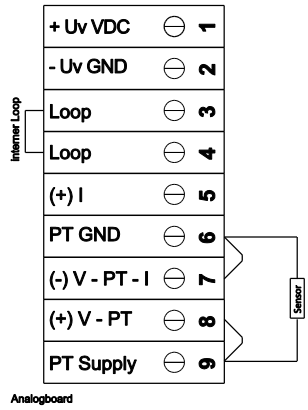
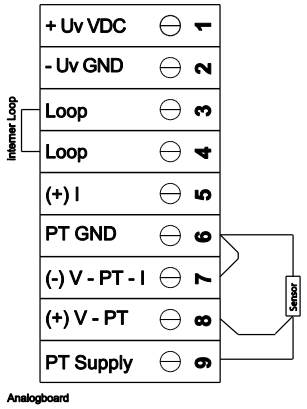
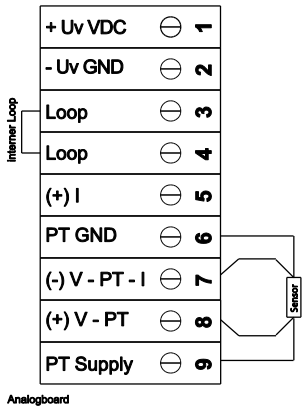
Sensors with a 0/4 – 20 mA output in 3-wire technology	
	. **METPOINT® BDL compact**
	**METPOINT® BDL compact with an external transmission** Ensure that the electric circuit is closed in any case.

Sensors with 0/4 – 20 mA output in 4-wire technology	
	**METPOINT® BDL compact**
	**METPOINT® BDL compact with an external transmission** Ensure that the electric circuit is closed in any case.

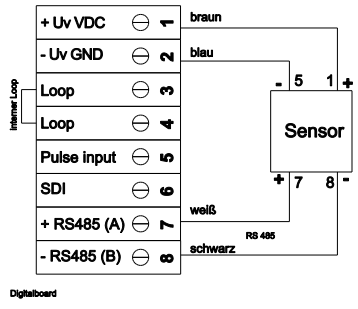
12.4 3 and 4-wire voltage supply 0 - 1/10/30 VDC

	**Sensors with a voltage output in 3-wire technology**
	**Sensors with a voltage output in 4-wire technology**

12.5 2, 3, and 4-wire terminal assignment of PT100/PT1000/KTY81

	**2-wire PT100/PT1000/KTY81**
	**3-wire PT100/PT1000/KTY81**
	**4-wire PT100/ 1000/KTY81**

12.6 Assignment with RS485 such as SD23

	**Sensor with an RS485 interface, e.g. SD23**

13 Connecting the METPOINT® BDL compact with a PC

Important:

The IP addresses of the PC and METPOINT® BDL compact must be provided statically (DHCP off) and they must be in the same network.

In the event that the IP address of the METPOINT® BDL compact was changed, the device needs to be restarted!

Note:

IP address of the METPOINT® BDL compact: see Chapter 12.2.4.3 Network settings

Restart of the METPOINT® BDL compact: see Chapter 12.2.4.7 Reset to factory defaults

With an 8-wire *crossover cable* which has an RJ45 plug connector on each side, or with an Ethernet cable with a c*rossover adapter*, the METPOINT® BDL compact can be connected with the PC.

Crossover cable with an RJ45 plug connector

Crossover adapter

When the METPOINT® BDL compact was connected with the PC via a suitable cable, graphic and tabular data evaluations can be implemented with the ***METPOINT READER SW201*** software.

Network settings for Windows PCs:

Windows 7:

Start ➔ System control ➔ Network and sharing centre ➔ Change adapter settings ➔ Lan connection ➔ Properties ➔ Internet protocol version 4 (TCP/IPv4) ➔ Use the following IP address ➔ Enter the IP address and subnet mask

Afterwards: OK ➔ OK ➔ Close

Windows Vista:

Start ➔ System control ➔ Network and sharing centre ➔ Manage network connections ➔ Lan connection ➔ Properties ➔ Internet protocol version 4 (TCP/IPv4) ➔ Use the following IP address ➔ Enter the IP address and subnet mask

Afterwards: OK ➔ OK ➔ Close

Windows XP:

Start ➔ Settings ➔System control ➔ Network connection ➔ LAN connection ➔ Properties ➔ Internet protocol (TCP/IP) ➔ Use the following IP address ➔ Enter the IP address and subnet mask.

Afterwards: OK ➔ OK ➔ Close

14 Operation METPOINT® BDL compact

The operation is self-explanatory to the largest possible extent and is menu-driven via the touch panel.
The selection of the respective menu items is realized via short "tapping" with the finger or using a soft-pointed pen.

Caution: Please do not use pens or other objects with sharp edges!
The foil may be damaged!

After the connection of the sensors, the latter also need to be configured.

Entries or changes can be made in all the fields with a white background.
The measured values can be displayed as a curve or as values.

Words in *green letters* mainly point to the illustration(s) in the chapter section. But also related important menu paths or menu items are marked in *green letters*.

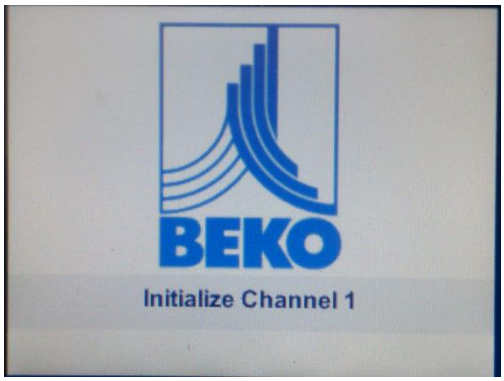
The menu navigation is generally shown in *green letters*!

The table of contents and the chapter references in blue letters contain links to the respective chapter headers.

14.1 Main menu (home)

You can go to every available sub item via the main menu.

14.2 Initialization

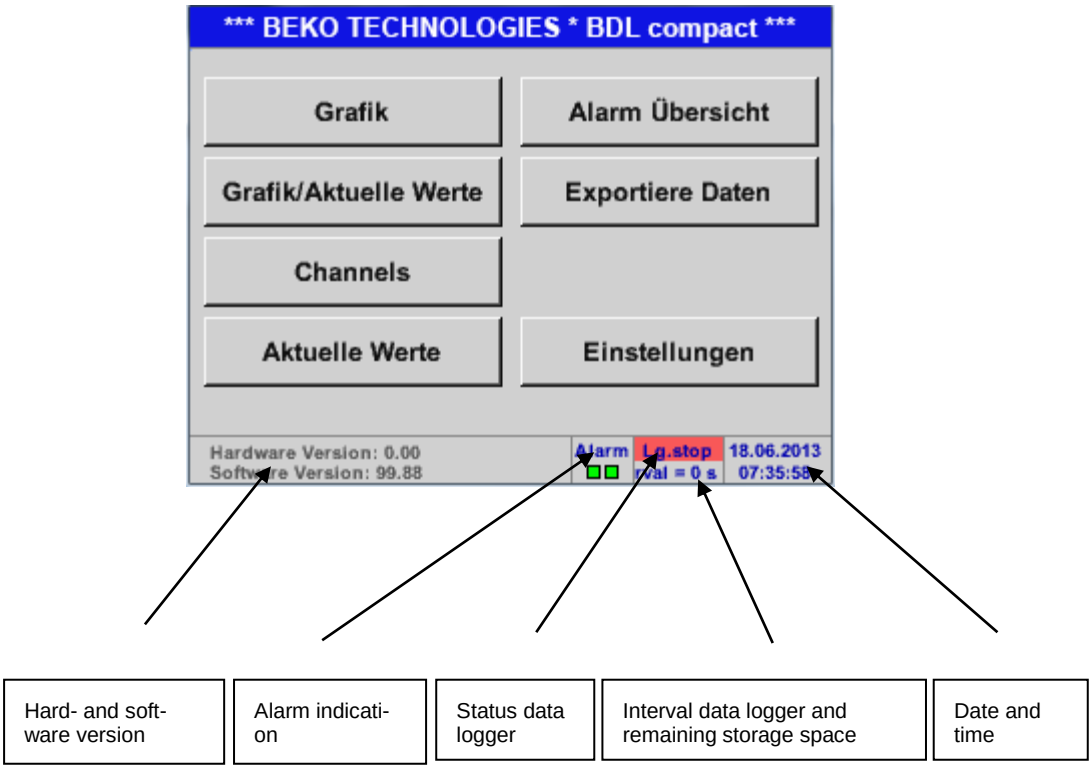


Subsequent to the switching-on of the METPOINT® BDL compact, all channels are initialized and the main menu appears.

Caution:
At the first start-up, channels may not be preset.

Please select the suitable configurations in Chapter 12.2.2 Sensor settimgs and set them!

14.2.1 Main menu subsequent to the switching-on



Important:

Prior to carrying out the first sensor settings, the language and time should be set.

Note:

Chapter 12.2.4.1 Language

(English menu navigation: *Main ➔ Settings ➔ Device Settings ➔ Set Language*)

Chapter 12.2.4.2 Date & time

(English menu navigation: *Main ➔ Settings ➔ Device Settings ➔ Date & Time*)

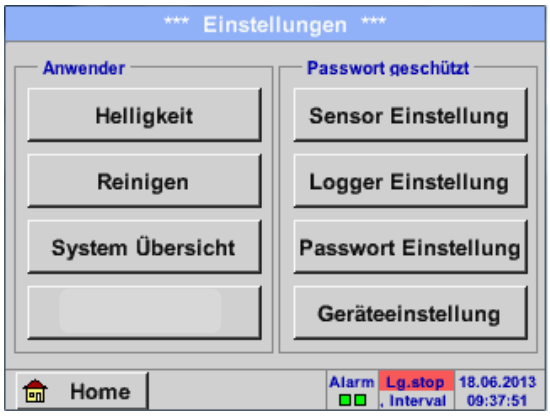
14.3 Settings

All settings are password-protected!
Settings or changes must generally be confirmed by OK!

Note:

When returning to the main menu and calling again one of the setting menus afterwards, the password must be re-entered!

Main menu ➔ Settings



Overview of the *settings*

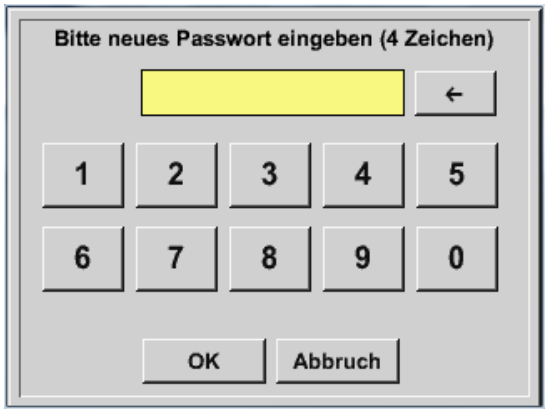
14.3.1 Password setting

Main menu ➔ Settings ➔ Password setting

Password when delivered: 4321

If required, it can be changed under:
Password settings.

The new password must be entered twice and confirmed by *OK*.



In the event that a wrong password is entered, *Enter password* or *Repeat new password* will appear in red letters.

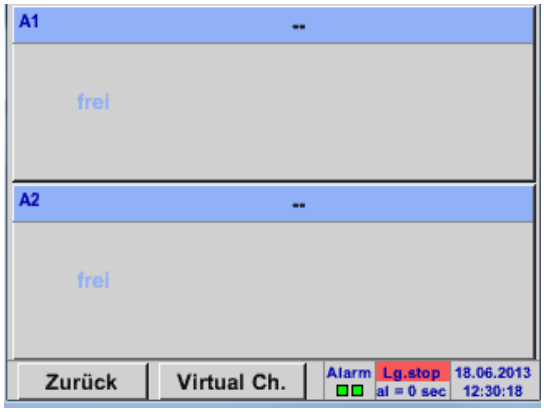
In the event of a forgotten password, a new password can be created by entering the master password.

The master password is supplied along with the device documentation.

14.3.2 Sensor settings

Important:
Sensors from BEKO TECHNOLGIES are generally pre-configured and can be directly connected to a free sensor channel!

Main menu ➔ Settings ➔ Sensor settings



After having entered the password, an overview of the available channels will appear.
Depending on the version, these are 2 or 4 channels.

Note:
Normally, no channels are preset!

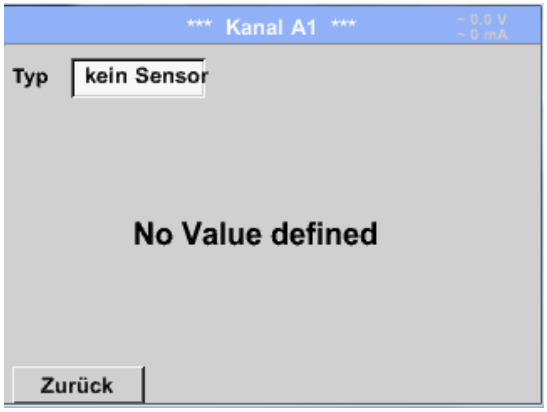
Note:
Depending on the version of the METPOINT® BDL compact, the following combinations are possible:

Combination / Channel	1	2	3	4	5	6
A1	D	D	D	A	A	A
A2	D	D	D	A	A	A
B1		D	A		A	D
B2		D	A		A	D

D = Digital channel A = Analog channel

14.3.2.1 Selection of the sensor type (example: BEKO digital sensor type)

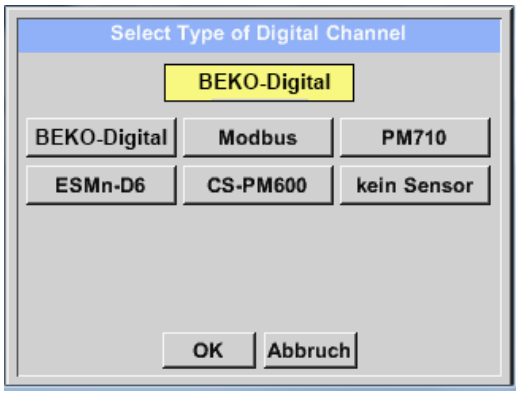
Main menu ➔ Settings ➔ Sensor settings ➔ A1



If no sensor was configured yet, the, *Type* **no sensor** will appear.

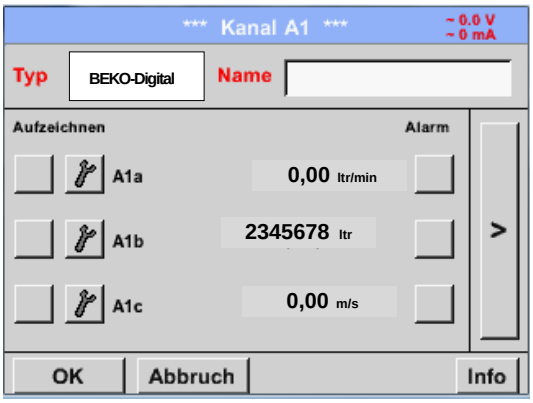
By pressing on the text field *Type* **no sensor**, you will go to the selection list of the sensor types (see next step).

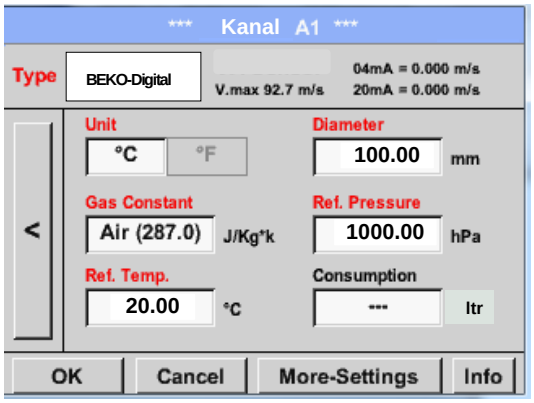
Main menu ➔ Settings ➔ Sensor settings ➔ A1 ➔ Text field type ➔ BEKO digital

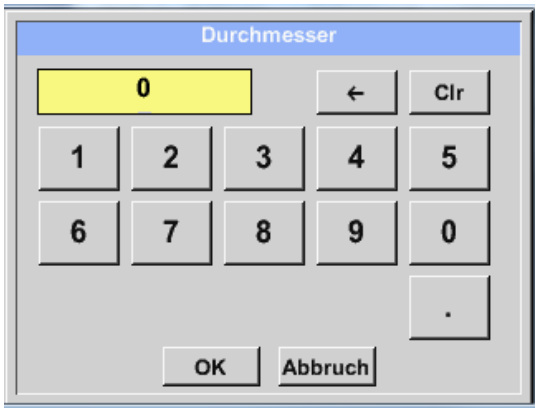


Now, the *Type* **BEKO digital** is selected for the VA/FA 400 series and confirmed by *OK*.

Main menu ➔ Settings ➔ Sensor settings ➔ A1 ➔ Right arrow (2nd page) ➔Text field diameter







Here, the *inner diameter* of the flow pipe can be entered in the event that it was not automatically correctly set.

In addition, the counter reading of the previous sensor can be entered when replacing the sensor.

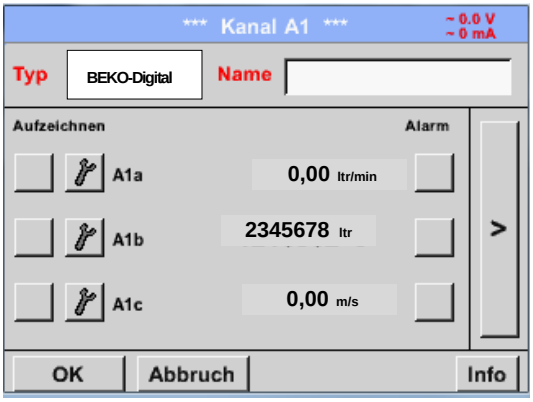
Please confirm with OK and go back with the left arrow (1st page).

Important:

The *inner diameter* should be entered as exactly as possible, since, otherwise, the measuring results will be falsified!

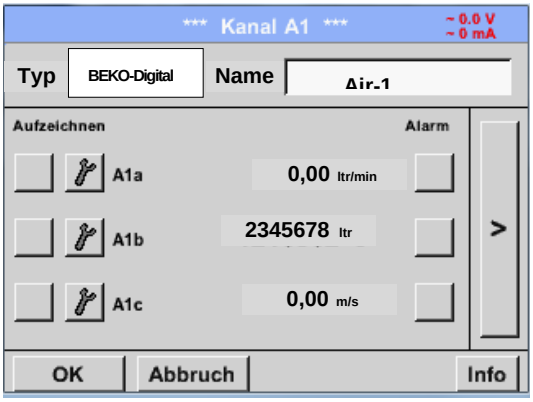
No uniform standard exists for the inner diameter of the pipe!
(Please ask the manufacturer or, if possible, check the measurements yourself!)

Main menu ➔ Settings ➔ Sensor settings ➔ A1



Now, a *name* can be entered.

Main menu ➔ Settings ➔ Sensor settings ➔ A1



Subsequent to marking and confirming by *OK*, the configuration of the sensor is completed.

Further configuration possibilities regarding sensors, see Chapters 12.2.2.5 to 12.2.2.8!

See also Chapter 12.2.2.7 Marking and setting text fields

Note:
After having confirmed by *OK*, the lettering is switched to black again. The values and settings have been accepted.

Caution:

Reference temperature and reference pressure (setting ex works 20°C, 1000 hPa):
All the volume flow (m³/h) and consumption values (m³) that are indicated on the display refer to 20°C and 1000 hPa (according to ISO 1217 suction condition).
Alternatively, 0°C and 1013 hPa (=standard cubic metre according to DIN 1343) can also be entered as the reference. Under no circumstances must the operating pressure or the operating temperature be entered into the reference conditions!

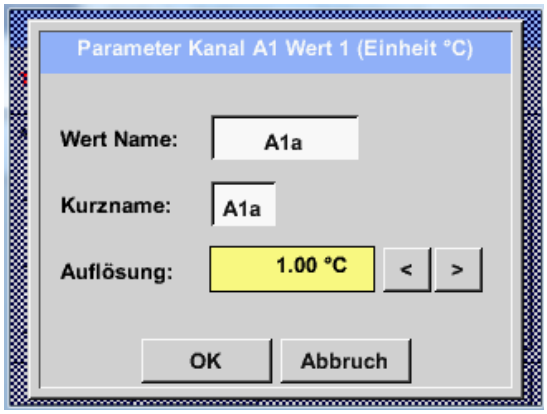
14.3.2.2 Denoting the measuring data and determining the resolution of the decimal places

Note:

The *resolution* of the decimal places, *short name* and *value name* can be found below the **tool button**!

Tool button: 

Main menu ➔ Settings ➔ Sensor settings ➔ A1 ➔ Tool button



For the *value* to be recorded, a *name* with 10 characters can be entered in order to simplify its identification at a later moment in the menu items *Graphics* and *Graphics/current values*.

Otherwise, the designation would be *A1a*, for example.

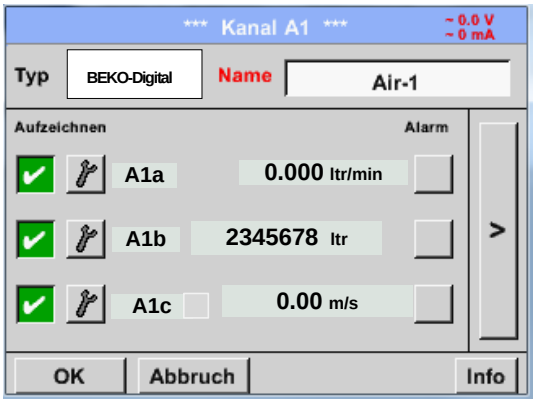
A1 is the channel name and *a* is the first measured value in the channel, while *b* would be the second, and *c* the third.

The *resolution* of the decimal places is easily adjustable by pressing right and left (0 to 5 decimal places).

See Chapter 12.2.2.7 Marking and setting text fields

14.3.2.3 Recording measuring data

Main menu ➔ Settings ➔ Sensor settings ➔ A1 ➔ Recording button



With the *recording* buttons, the measuring data are selected which will be stored at an **activated data logger**.

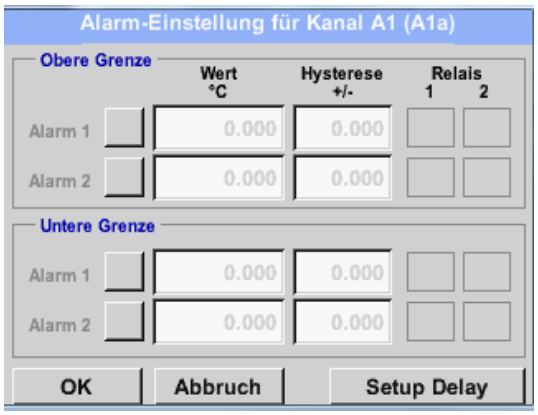
Caution:

Prior to recording the selected measuring data, the data logger must be activated subsequent to the completion of the settings (see Chapter 12.2.1.2 Logger settings (data logger))**.**

14.3.2.4 Alarm settings

Main menu ➔ Settings ➔ Sensor settings ➔ A1 ➔ Alarm button

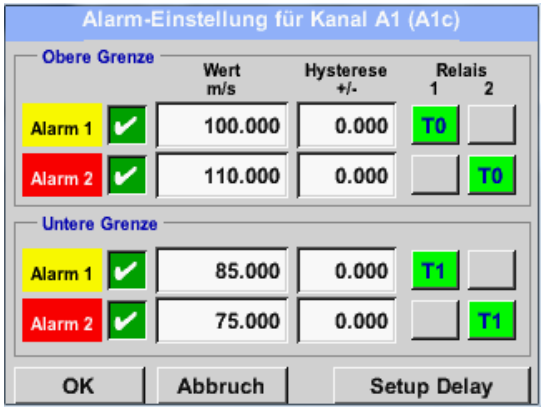
By pressing an alarm button, the following window will appear:



In the alarm settings, an *alarm-1* and *alarm-2* incl. hysteresis can be entered for each channel.

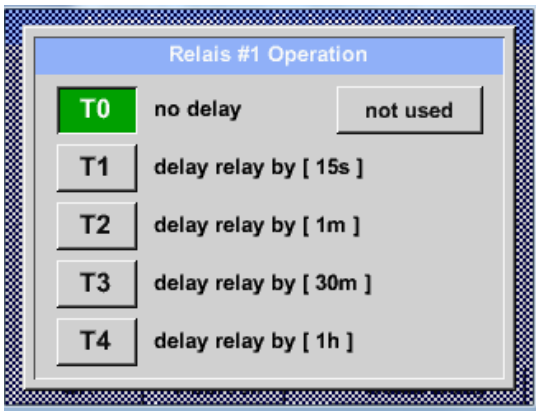
Via the alarm overview menu item (via the main menu), the alarm settings can also be configured or changed.

Main menu ➔ Settings ➔ Sensor settings ➔ A1 ➔ *Alarm* button ➔ *Alarm 1* and *Alarm 2* buttons + *Relay* buttons



Here, for example, *alarm-1* is set to relay 1 and *alarm-2* to relay 2.

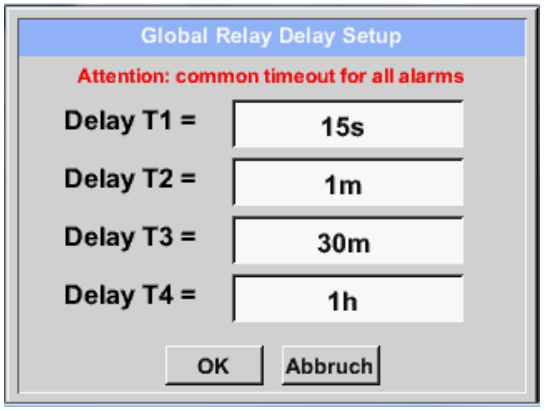
Main menu ➔ Settings ➔ Sensor settings ➔ A1 ➔ *Alarm* button ➔ *Relay* buttons



It is possible to choose between five different delays.

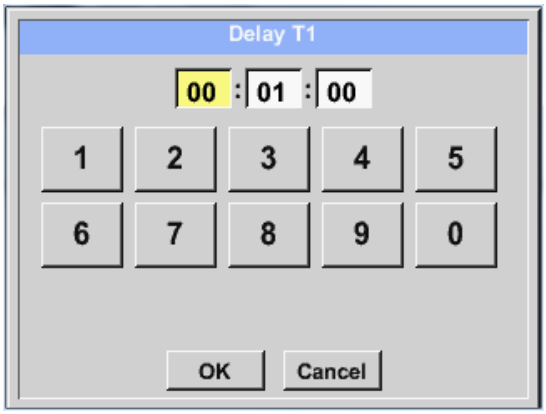
The delays (T1 to T4) are freely definable but they apply commonly to all relays.

Main menu ➔ Settings ➔ Sensor settings ➔ A1 ➔ *Alarm* button ➔ *Setup delay*



The delays (T1 to T4) are freely definable but they apply commonly to all relays.

Main menu ➔ Settings ➔ Sensor settings ➔ A1 ➔ *Alarm* button ➔ *Setup delay* ➔ Text field delay T1

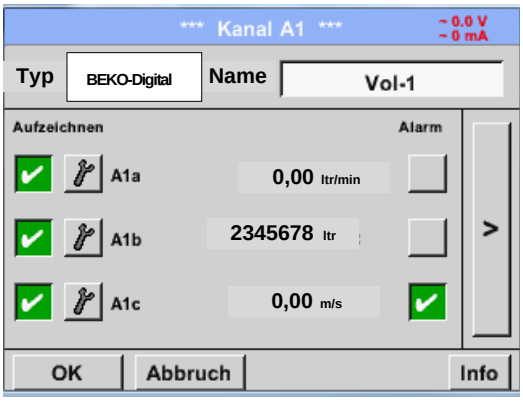


Here, the desired delay time for T1 needs to be defined.

Delay time T0 cannot be changed and is an immediate alarm.

Please confirm with *OK*.

Main menu ➔ Settings ➔ Sensor settings ➔ A1

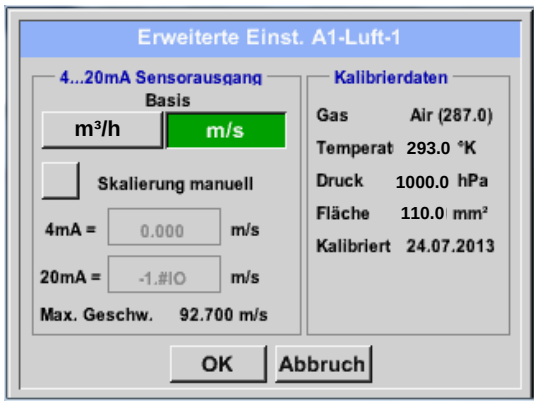


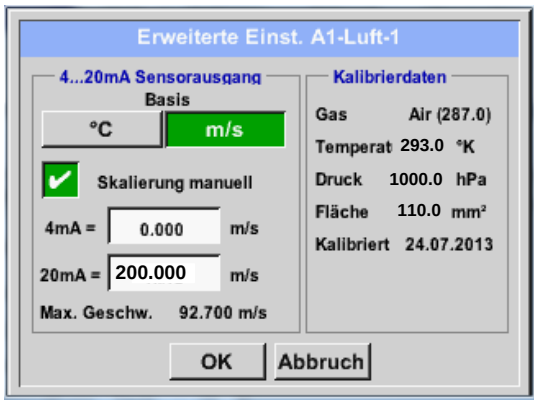
Subsequent to the alarm activation at channel A1.

The settings are completed by means of the *OK* buttons!

14.3.2.5 Advanced settings (scaling analog output)

Main menu ➔ Settings ➔ Sensor settings ➔ A1 ➔ Right arrow (2nd page) ➔ Advanced settings





In the *advanced settings*, it can be determined whether the 4-20 mA analog output of the sensor should be based on the flow volume or on the velocity.

The text field with a green background was chosen.

In addition, the measuring range can be set by pressing the *scaling manual* button.

After the confirmation with *OK*, the settings are accepted.

Note:

The *advanced setting* is only available for **BEKO digital**.

The settings are completed by means of the *OK* buttons!

Note:

After having confirmed by *OK*, the lettering is switched to black again. The values and settings have been accepted.

14.3.2.6 Dew point sensor with the BEKO digital type

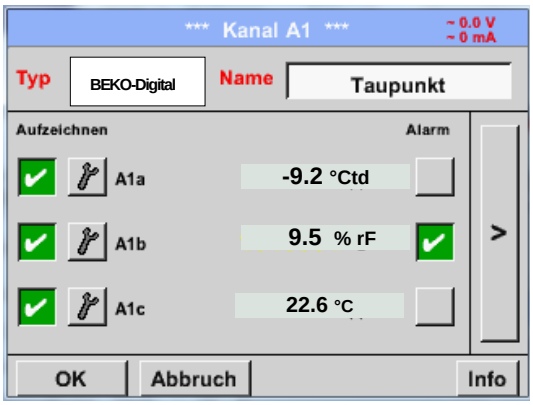
First step: select a free sensor channel
Main menu ➔ Settings ➔ Sensor settings ➔ B1

Second step: Select type BEKO Digital
Main menu ➔ Settings ➔ Sensor settings ➔ B1 ➔ Type text field ➔ BEKO digital

Third step: confirm twice with OK

> **Now, you can determine a *name*** *(see Chapter* 12.2.2.7 Marking and setting text fields*)*, **the alarm settings** *(see Chapter* 12.2.2.4 Alarm settings*)* **and recording settings** *(see Chapter* 12.2.2.3 Recording measuring data*)*, **as well as the *resolution* of the decimal places** *(see Chapter* 12.2.2.2 *Denoting the measuring data and* Determining the resolution of the decimal places*)*.

Main menu ➔ Settings ➔ Sensor settings ➔ B1



The METPOINT® BDL compact recognizes whether the connected sensor is a flow rate or a dew point sensor from **BEKO TECHNOLOGIES** and automatically sets the **BEKO digital** subtype correctly.

Note

This does not apply to the sensors (SD21/23 and SP21/22)

14.3.2.7 Marking and setting text fields

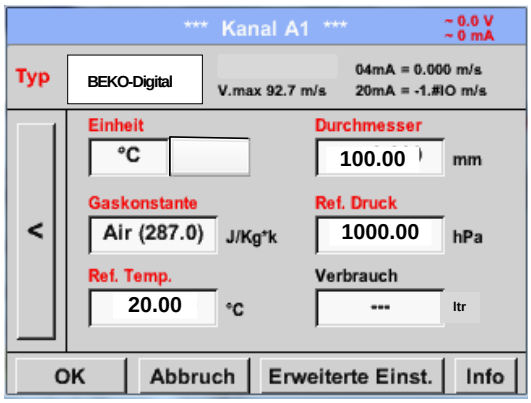
Main menu ➔ Settings ➔ Sensor settings ➔ A1

If the data logger is activated, the following window appears. By pressing *yes*, the data logger can be deactivated.

(only activated when settings and recordings were already implemented)

Note:

When sensor settings are implemented or changed, the data logger must be on *STOP*.



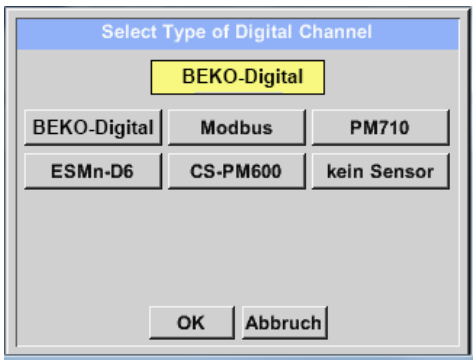
By pressing on fields with a white background, changes or entries can be made.

The *alarm* (see Chapter 12.2.2.4 Alarm settings) **and *recording* buttons** (see Chapter 12.2.2.3 Recording measuring data), **the *resolution* of the decimal places and the *short name* or the value name** (see Chapter 12.2.2.2 *Denoting the measuring data and* determining the resolution of the decimal places), **as well as the *advanced settings*** *(see Chapter* 12.2.2.5 Advanced settings) **are all described in Chapter 12.2.2 Sensor settings.**

Main menu ➔ Settings ➔ Sensor settings ➔ A1 ➔ Text field name

It is possible to enter a name with up to 24 characters.

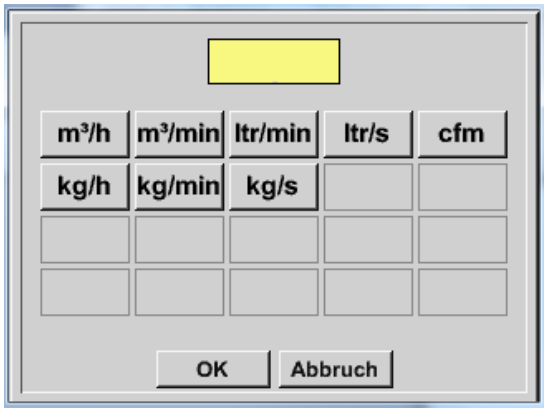
Main menu ➔ Settings ➔ Sensor settings ➔ A1 ➔ Text field type



Nach Drücken des *Type* Textfeldes lassen sich folgende Optionen wählen.

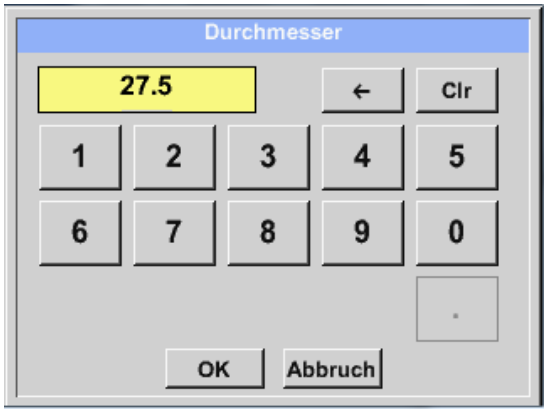
See also Chapter 12.2.2.8 Configuration of analog sensors

Main menu ➔ Settings ➔ Sensor settings ➔ A1 ➔ Text field unit



A preset selection of suitable *units*.

Main menu ➔ Settings ➔ Sensor settings ➔ A1 ➔ Right arrow (2nd page) ➔Text field diameter



Important:

Here, the *inner diameter* of the flow pipe can be entered in the event that it was not automatically correctly set.

Here, 27.5 mm, for example, are entered for the *inner diameter*.

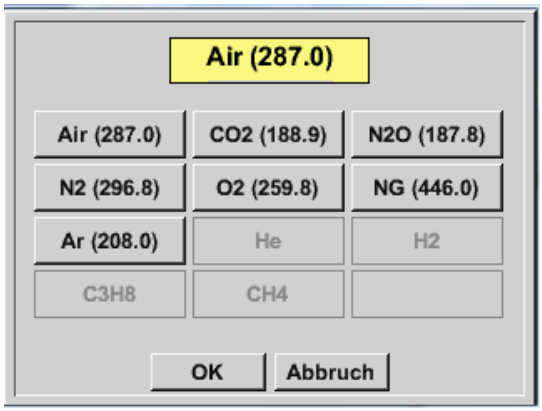
Important:

The *inner diameter* should be entered as exactly as possible, since, otherwise, the measuring results will be falsified!

No uniform standard exists for the inner diameter of the pipe!

(Please ask the manufacturer or, if possible, check the measurements yourself!)

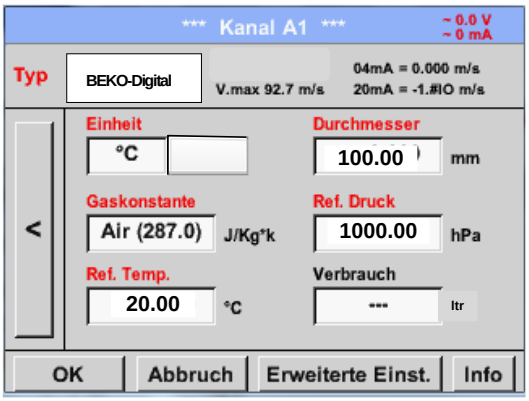
Main menu ➔ Settings ➔ Sensor settings ➔ A1 ➔ Right arrow (2nd page) ➔ Text field gas constant



A preset selection of suitable *gas constants*.

The remaining text fields can be **marked in the same manner as is described here, in Chapter** 12.2.2.7 Marking and setting text fields**!**

Main menu ➔ Settings ➔ Sensor settings ➔ A1 → Right arrow (2nd page)



The text fields with red letters show that different values, such as the diameter and the *name*, were changed or added.

See also Chapter 12.2.2.1 Selection of the sensor type (Example type: BEKO-Digital sensor)

Note:

After having confirmed with *OK*, the lettering returns to black and the values and settings are accepted.

Caution:

Reference temperature and reference pressure (setting ex works 20°C, 1000 hPa):

All the volume flow (m³/h) and consumption values (m³) that are indicated on the display refer to 20°C and 1000 hPa (according to ISO 1217 suction condition).

Alternatively, 0°C and 1013 hPa (=standard cubic meter according to DIN 1343) can also be entered as the reference. Under no circumstances must the operating pressure or the operating temperature be entered into the reference conditions!

14.3.2.8 Configuration of analog sensors

Use only for the METPOINT® BDL compact. Variants with an assembled analog board are possible.

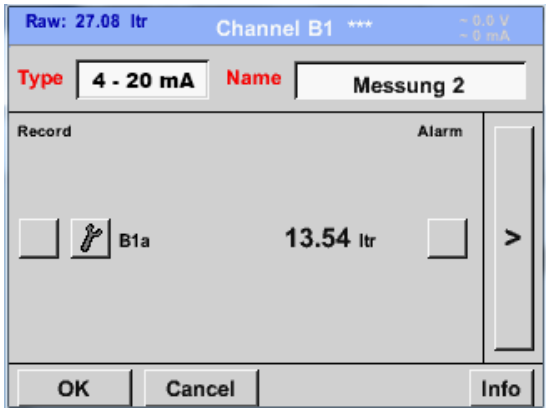
Short overview of the possible *Type* settings including examples. For *BEKO-Digital*, see Chapter 12.2.2.1 Selection of the sensor type (example BEKO-Digital sensor type) and 12.2.2.6 Dew point sensor with the BEKO-DIGITAL type.

The *alarm settings, recording* buttons, the *resolution* of the decimal places as well as the *short name* and *value name* are all described in Chapter **12.2.2 Sensor settings**.

For the marking of the text fields, see Chapter 12.2.2.7 Marking and setting text fields!

14.3.2.8.1 Type 0/4 – 20 mA

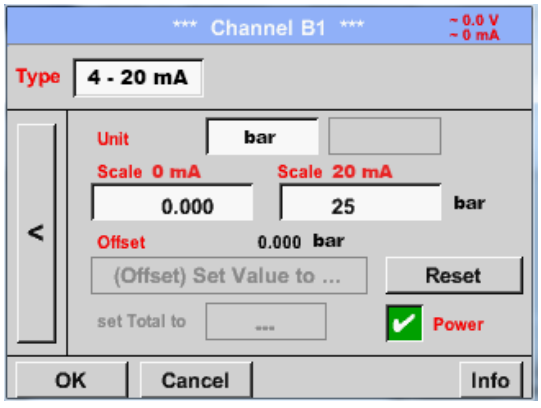
Main menu ➔ Settings ➔ Sensor settings ➔ B1 ➔ Type text field ➔ 0-20 mA



Scaling of the sensor (here, for example, *type* **0 – 20 mA** - corresponds to 0 – 25 bar) can be found in the data sheet of the connected sensor.

e.g. SP21

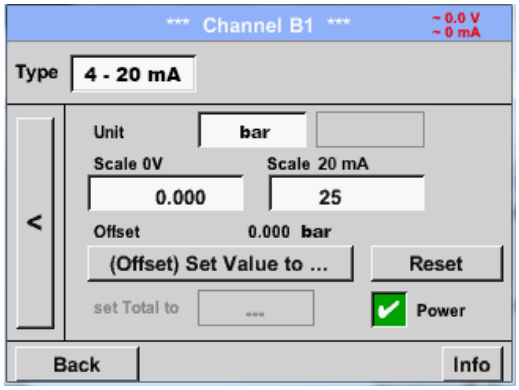
Main menu ➔ Settings ➔ Sensor settings ➔ B1 ➔ Right arrow (2nd page)



For *scale 4 mA*, please enter the lower scale value and for *scale 20 mA* the upper scale value.

The *ext. sensor supply voltage* is switched on when the sensor requires this.

Please confirm with *OK*.

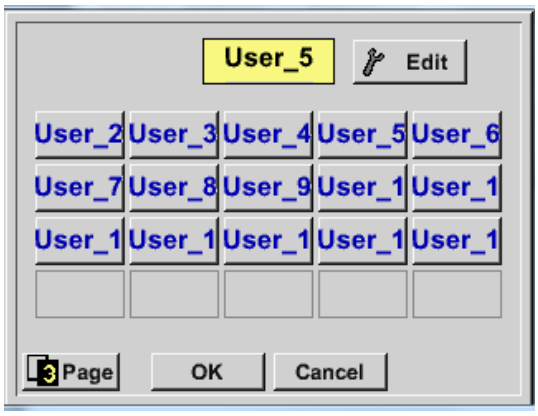


With the *Set-value-to* button *(offset)*, the measured data of the sensor can be set to a certain value.

The positive or negative difference of the *offset* is indicated.

With the *reset* button, the *offset* can be reset to zero.

Main menu ➔ Settings ➔ Sensor settings ➔ B1 ➔ Unit text field

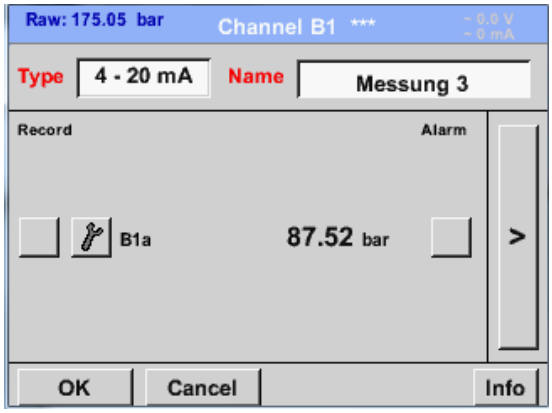


A preset selection of suitable units for ***types*** *0/4 – 20 mA*.

By pressing the *page* button, paging forward is possible.

In addition, internal "*user*" units can be defined, if required.

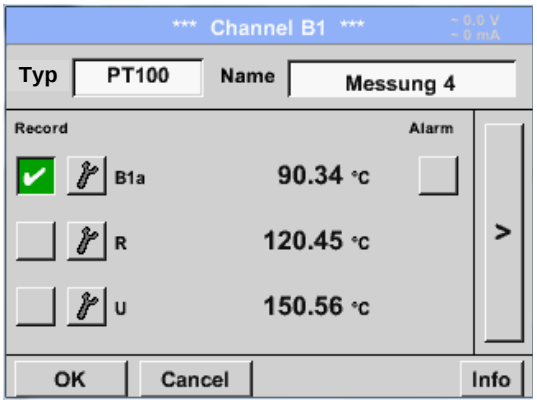
Main menu ➔ Settings ➔ Sensor settings ➔ B1 ➔ Type text field ➔ 0/4-20mA

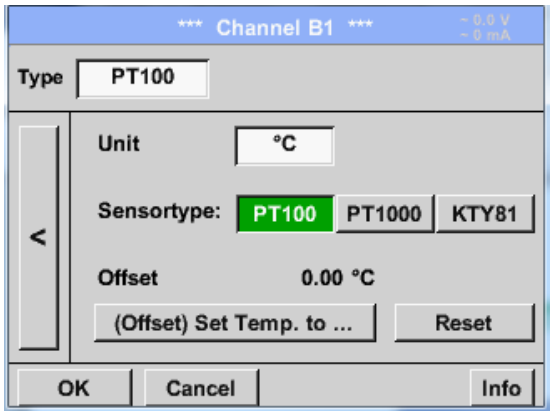


Here, for example, *Type* **4 – 20 mA**.

14.3.2.8.2 Type PT100x and KTY81

Main menu ➔ Settings ➔ Sensor settings ➔ B2 ➔ Type text field ➔ PT100x



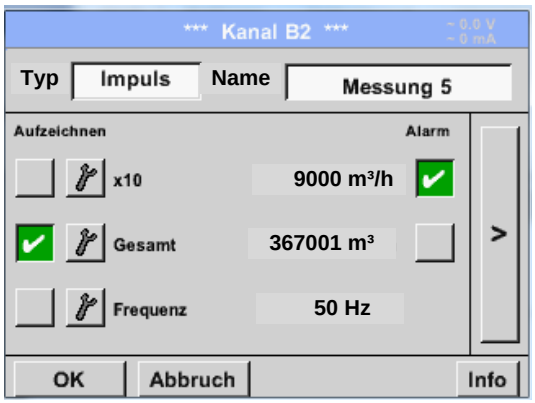


Here, the sensor type *PT100* and the *unit* °C were chosen. Alternatively, the sensor types *PT1000* and *KTY81*, as well as the *unit* °F can be selected.

Please refer to Chapter 12.2.2.8.1 Types 0 - 1/10/30 volt and 0/4 - 20 mA for further setting possibilities!

14.3.2.8.3 Type pulse (pulse value)

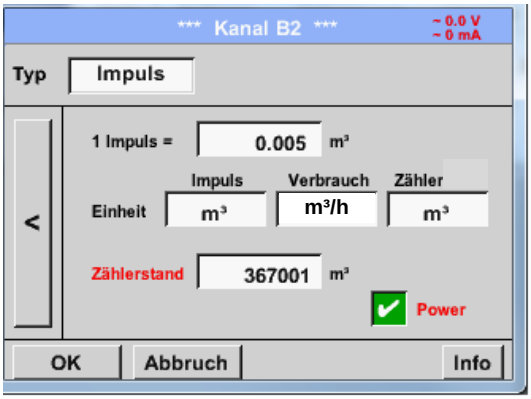
Main menu ➔ Settings ➔ Sensor settings ➔ B2 ➔ Type text field ➔ Pulse



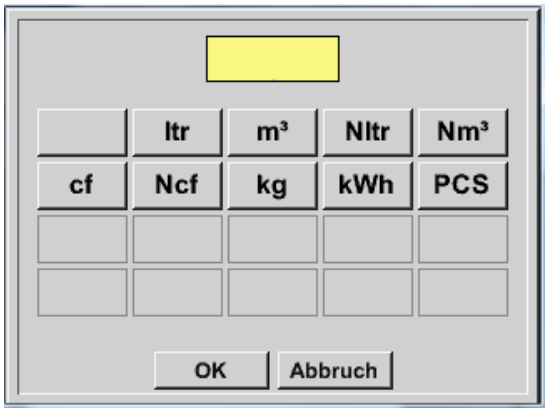
Normally, the numerical value with the unit stands for ***1 pulse*** on the sensor and can directly be entered into the **1 pulse =** text field.

Note:

Here, all of the text fields are already lettered or assigned.

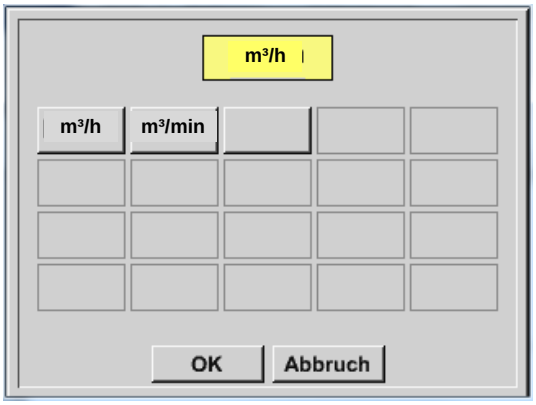


Main menu ➔ Settings ➔ Sensor settings ➔ B2 ➔ Right arrow (2nd page) ➔ Unit pulse



For the *unit* **pulse,** a flow volume or energy consumption can be chosen as a unit.

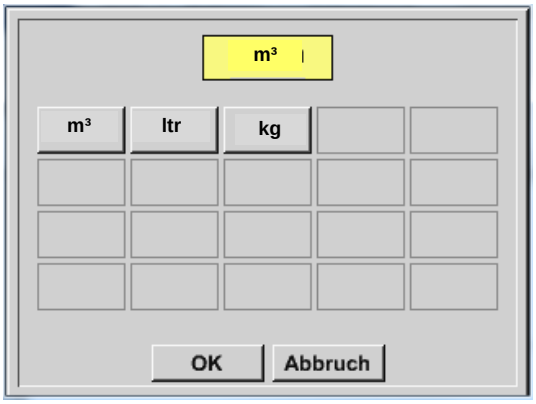
Main menu ➔ Settings ➔ Sensor settings ➔ B2 ➔ Right arrow (2nd page) ➔ Consumption



Units for the *current consumption* for the **pulse** *type*.

Note:
Example with the unit cubic metre!

Main menu ➔ Settings ➔ Sensor settings ➔ B2 ➔ Right arrow (2nd page) ➔ Unit meter



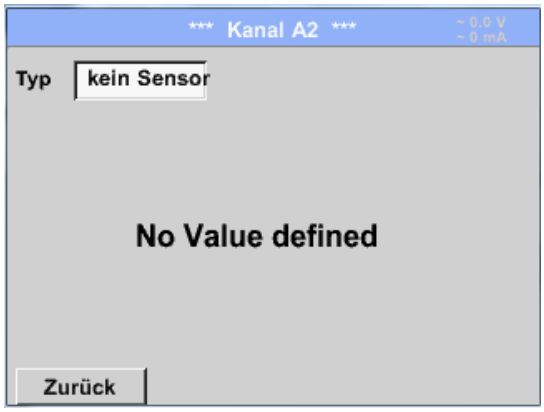
The available units for the unit of the *counter* for the *type* **pulse**

The counter reading can, at all times, be set to any or a desired value.
en beliebigen bzw. gewünschten Wert gesetzt werden.

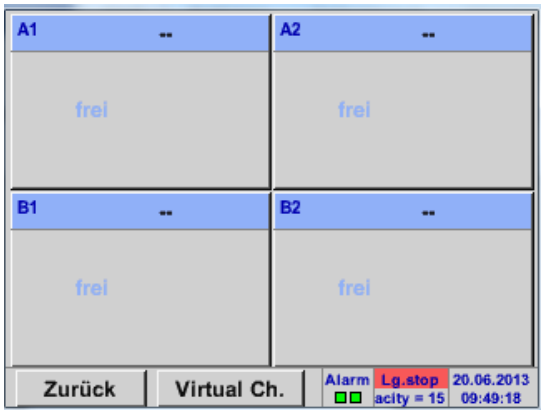
Please refer to Chapter 12.2.2.8.1 Types 0 - 1/10/30 volt and 0/4 - 20 mA for further setting possibilities!

14.3.2.8.4 Type no sensor

Main menu ➔ Settings ➔ Sensor settings ➔ A2 ➔ Type text field ➔ No sensor



Serves to declare a channel which is currently not required as *not configured*.



When returning from *Type* **no sensor** to sensor settings, the channels are displayed as *free*.

14.3.2.9 Type Modbus

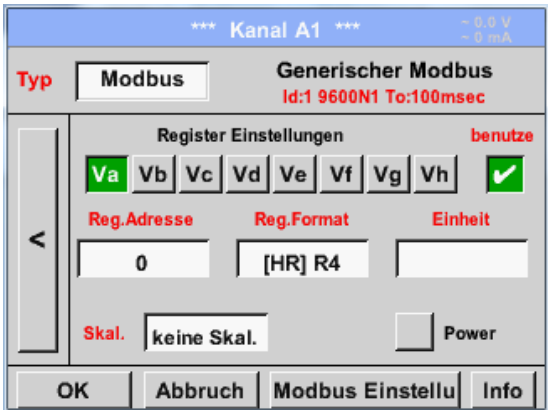
14.3.2.9.1 Selection and activation of the sensor type

First step: select a free sensor channel
Main menu ➔ Settings ➔ Sensor settings ➔ A1

Second step: select the Modbus type
Main menu ➔ Settings ➔ Sensor settings ➔ A1 ➔ Type text field ➔ Modbus

Third step: confirm with OK
Now, a ***name*** (see Chapter 12.2.2.7 Marking and setting text fields) can be entered.

Main menu ➔ Settings ➔ Sensor settings ➔ A1 ➔ Right arrow (2nd page) ➔ VA ➔ Use

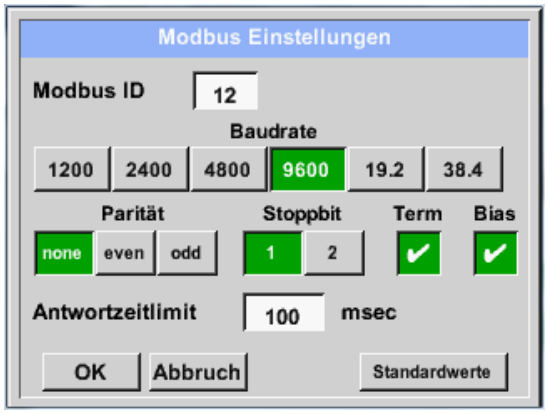


Via Modbus, up to eight registry values (from input or holding registers) of the sensor can be read out.

Selection via the register tabs *Va –Vh* and activation by means of the respective *use* button.

14.3.2.9.2 Modbus settings

Main menu ➔ Settings ➔ Sensor settings ➔ A1 ➔ Right arrow (2nd page) ➔ Modbus settings ➔ID text field



Here the *Modbus ID* is entered which is determined for the sensor, permissible values are *1 – 247*, (ex. here *Modbus ID = 12)*

In addition, the serial transmission settings *baud rate, stop bit, parity bit, and timeout time* need to be defined.

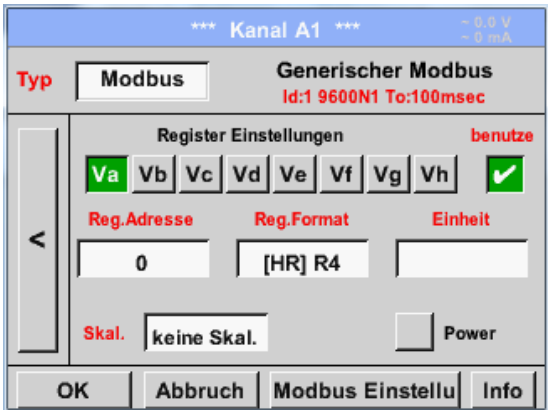
When the BDL compact is connected to the end of the bus, the termination can be activated via the *Term* button, or a BIAS energised via the *Bias* button.

Confirmation with ***OK.***

Resetting to the initial settings by means of the *set to default* button.

Please refer to the data sheet of the sensor for the setting of the Modbus ID and the transmission settings.

Main menu ➔ Settings ➔ Sensor settings ➔ A1 ➔ Reg. address text field



The sensor provides the measured values in registers. The values can be located and read out by the BDL compact via Modbus.

For this purpose, the desired register addresses need to be set in the BDL compact.

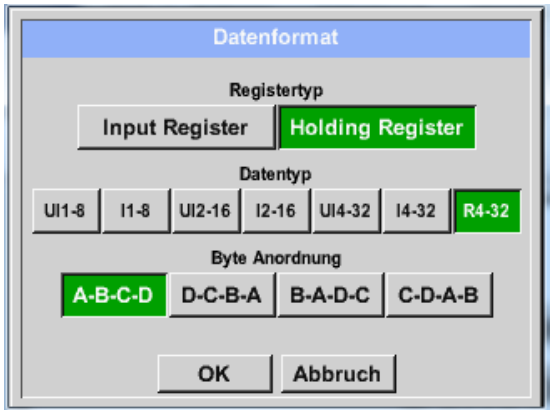
The entry of the *register/data address* is implemented in decimal values from 0 to 65535.

Important:

Here, the correct *register address* is required.

It must be observed that the register number may differ from the register address (offset). Please refer to the sensor/transducer data sheet for this purpose.

Main menu ➔ Settings ➔ Sensor settings ➔ A1 ➔ Reg. format text field



By means of the *input register* and *holding register* buttons, the respective Modbus register type is selected.

With the *data type* and *byte order*, the number format and the order of transmission of the individual number bytes is determined. These must be used in combination.

Supported data types:

Data Type:	UI1(8b)	= unsigned integer	=>	0	- 255
	I1 (8b)	= signed integer	=>	-128	- 127
	UI2 (16b)	= unsigned integer	=>	0	- 65535
	I2 (16b)	= signed integer	=>	-32768	- 32767
	UI4 (32b)	= unsigned integer	=>	0	- 4294967295
	I4 (32b)	= signed integer	=>	-2147483648	- 2147483647
	R4 (32b)	= floating point number			

Byte Order:

The size of a Modbus register is 2 bytes. For a 32 bit value, two Modbus registers are read out by the BDL compact. Correspondingly, only one register is read out for a 16 bit value.

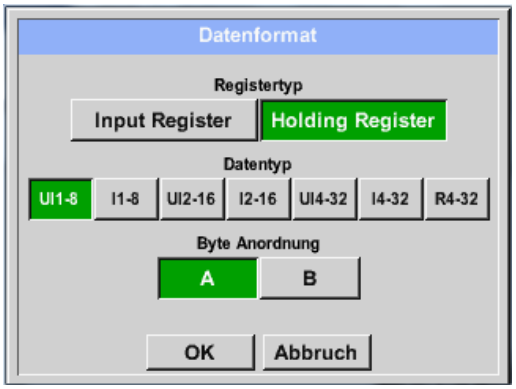
The Modbus specification only insufficiently defines the byte order with which the values are transmitted. In order to cover all of the possible cases, the byte order is freely adjustable in the BDL compact, and must be adapted to the order of the respective sensor (see sensor/transducer data sheet).

Example: high byte before low byte, high word before low word etc.

Therefore, settings must be defined in accordance with the sensor/transducer data sheet.

Examples:

Holding register - UI1(8b) - numerical value: 18

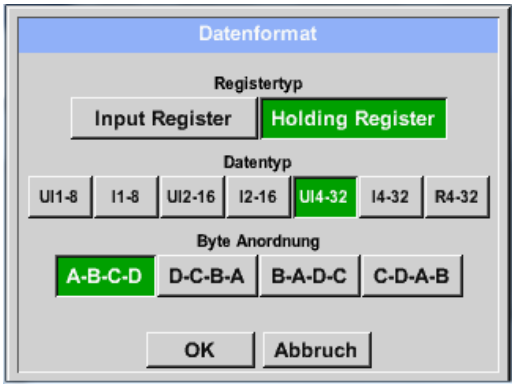


Selection register type *Holding register*, data type *U1(8b)* and byte order *A / B*

	Hbyte	Lbyte
18 =>	00	12

Data order	1. byte	2. byte
A	00	12
B	12	00

Holding register – UI4(32) - numerical value: 29235175522 → AE41 5652

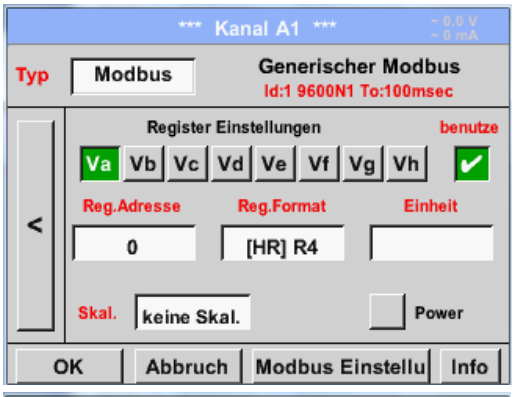


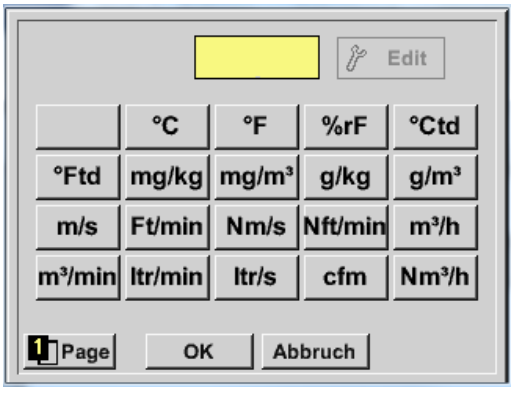
Selection register type *Holding register*, data type *U1 (32b)* and byte order *A-B-C-D*

	Hword		Lword	
	Hbyte	Lbyte	Hbyte	Lbyte
29235175522 =>	AE	41	56	52

Data order	1.byte	2.byte	3.byte	4.byte
A-B-C-D	AE	41	56	52
D-C-B-A	52	56	41	AE

Main menu ➔ Settings ➔ Sensor settings ➔ A1 ➔ Unit text field





Pressing the *Unit* text field will lead you to a list with the available units.

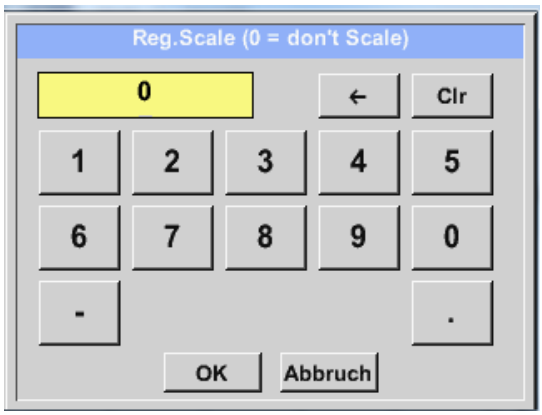
The unit is selected by pressing the button with the suitable unit. The unit is accepted by actuating the *OK* button.

Changing between the individual list pages is effectuated by pressing the *page* button.

In the event that the required unit is not available, you can create the unit yourself.

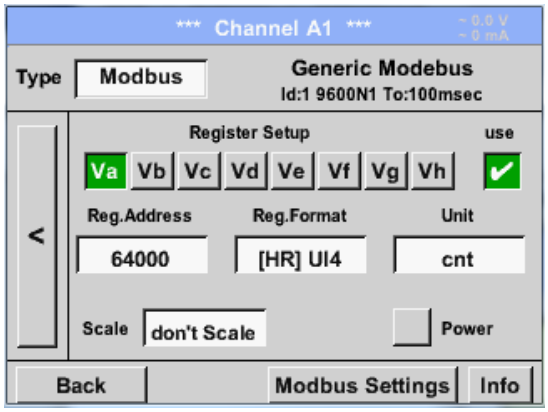
For this purpose, one of the free pre-defined *User_x* user buttons must be chosen.

Main menu ➔ Settings ➔ Sensor settings ➔ A1 ➔ Scal. text field



The application of this factor allows for the adjustment of the output value by the latter.

Main menu ➔ Settings ➔ Sensor settings ➔ A1 ➔ OK



By pressing the *OK* button, the specifications are accepted and stored.

14.3.2.9.3 Modbus settings for the METPOINT® SD23

When connecting the METPOINT® SD23 via Modbus, the following settings are required:

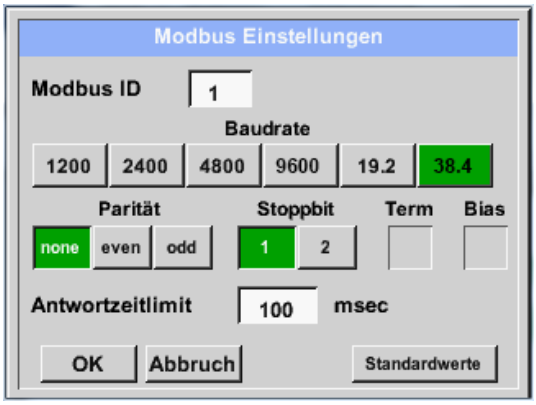
First step: select a free sensor channel
Main menu → Settings → Sensor settings → Select a free channel (example: channel A1)

Second step: select Modbus type
Main menu → Settings → Sensor settings → A1 → Type text field → Select Modbus and confirm with >OK<.

Third step: define a name
Main menu → Settings → Sensor settings → A1 → Name text field
Now, a ***name*** needs to be entered.

Fourth step: define the Modbus settings
Main menu → Settings → Sensor settings → A1 → Modbus settings

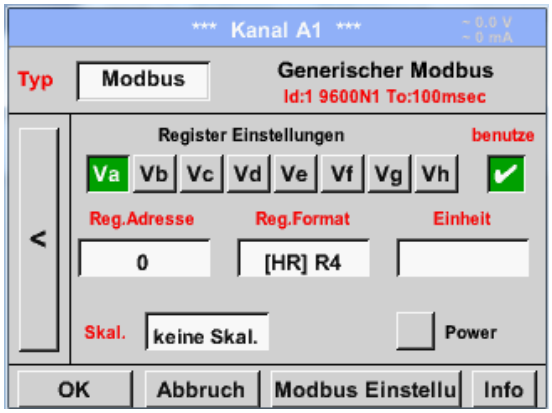
Note:
Further information regarding "Marking and setting text fields" can be found in Chapter 14.2.2.7.



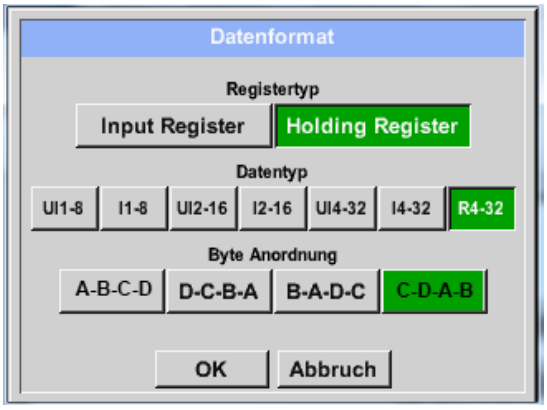
The corresponding Modbus ID can be taken from the data sheet of the sensor (here, for example, 1).
Adjust the other parameters according to the illustration.

Fifth step: define the register

Main menu → Settings → Sensor settings → A1 → Va → Use

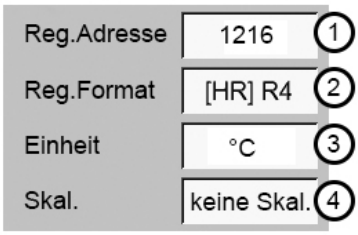


The definition of other registers is implemented in the same manner.



The settings of the reg./data format are the same for all the registers.

Sixth step: enter the Modbus parameters



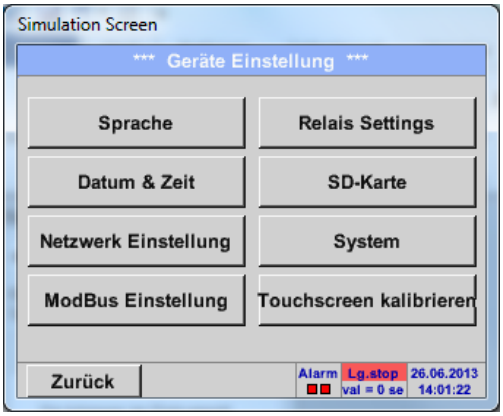
The entry of the Modbus parameters is implemented via the white buttons (1) – (4).

The following parameters can be retrieved via the corresponding registers:

Register	Designation	Address of register	Reg. format	Unit	Scal.
Va	Temperature	1216	[HR]R4	°C	No scal.
Vb	Rel. humidity	1152	[HR]R4	% rH	No scal.
Vc	Dew/freezing point	1536	[HR] R4	°C t_d	No scal.
Vd	Dew point	1472	[HR]R4	°C t_d	No scal.

14.3.3 Device settings

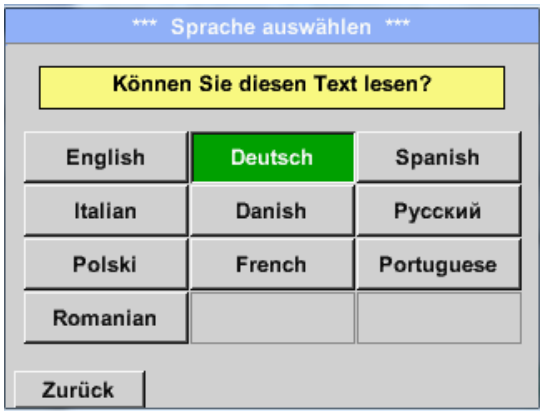
Main menu ➔ Settings ➔ Device settings



Overview of the device settings

14.3.3.1 Language

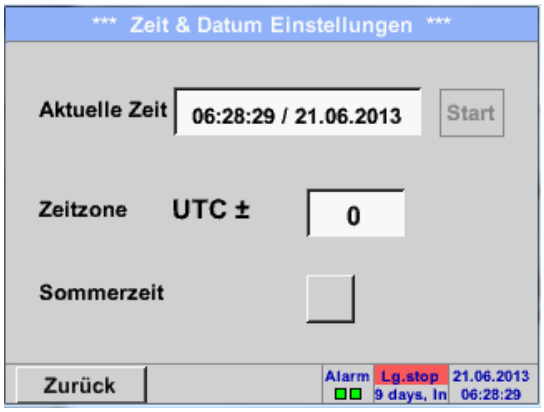
Main menu ➔ Settings ➔ Device settings ➔ Language



Here, one out of 10 languages can be selected for the METPOINT® BDL compact.

14.3.3.2 Date & time

Main menu ➔ Settings ➔ Device settings ➔ Date & time

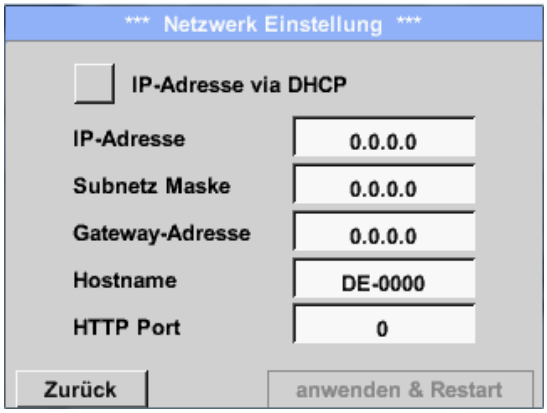


By pressing the *Time zone* text field and entry of the correct *UTC*, the correct time can be set worldwide.

Changeover to summer/winter time is implemented by pressing the *Summer time* button.

14.3.3.3 Network settings

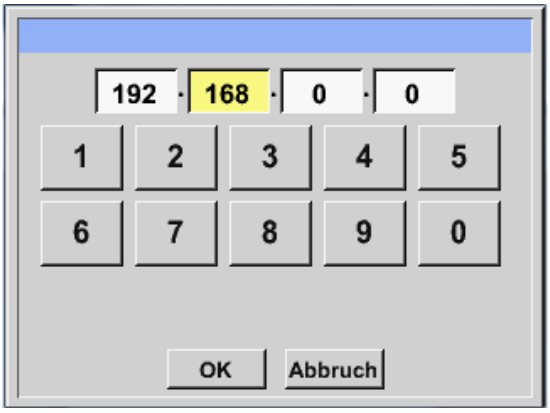
Main menu ➔ Settings ➔ Device settings ➔ Network settings



Here, a connection to a computer can be set up and established, with or without *DHCP*.

Note:

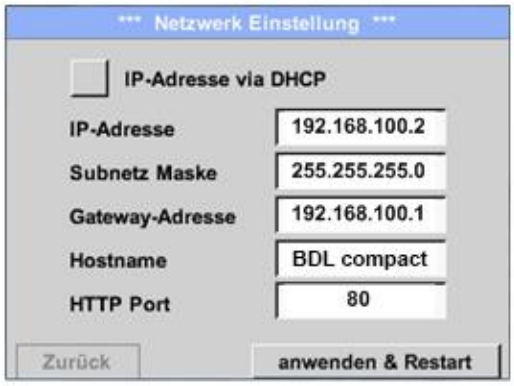
With an activated *DHCP* (green tick), the automatic integration of the METPOINT® BDL compact into an existing network is possible, without requiring manual configuration of the latter.



After having pressed, for example, the *IP address* text field, the input window appears where an IP partial address can be manually entered into the selected zone that is highlighted in yellow.

The *host name* can also be entered or changed by pressing the text field.

The subnet mask and gateway address are entered in the same manner!
(*lettering* host name, *see* Chapter 12.2.2.7 Marking and setting text fields)



For example an *IP address* from the address space class C network.

Note:

Private address space class A network 10.0.0.0 to 10.255.255.255

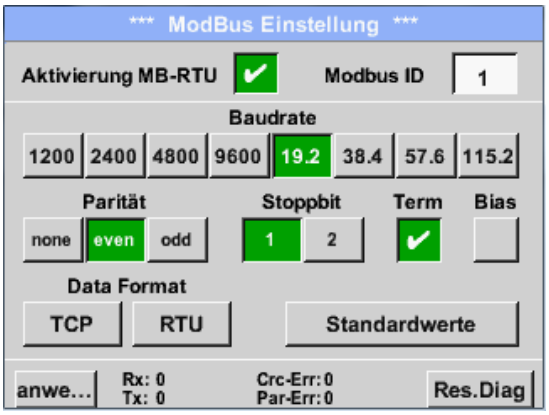
Private address space class B network 172.16.0.0 to 172.31.255.255

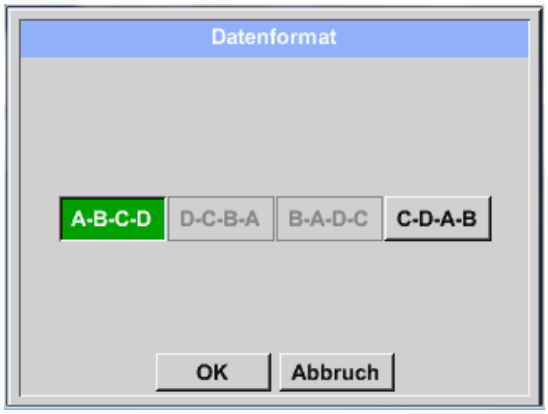
Private address space class C network 192.168.0.0 to 192.168.255.255

14.3.3.4 ModBus (slave)

With the *RS485 ModBus* interface, customer-specific systems (GLT, SPS, Scada) can be connected with the METPOINT® BDL compact.

Main menu ➔ Settings ➔ Device settings ➔ModBus settings





Here the transmission parameters *Modbus ID, baud rate, stop bit and parity* must be set. By setting the tick for *enable Modbus RTU(RS485)*, Modbus will be activated.

By pressing the *Set to default* button, the pre-adjusted default values are set.

Default values:	Baud rate:	19200
	Stop bit:	1
	Parity:	even

When the BDL compact is connected to the end of the bus, the termination can be activated via the *Term* button, or a BIAS energised via the *Bias* button.

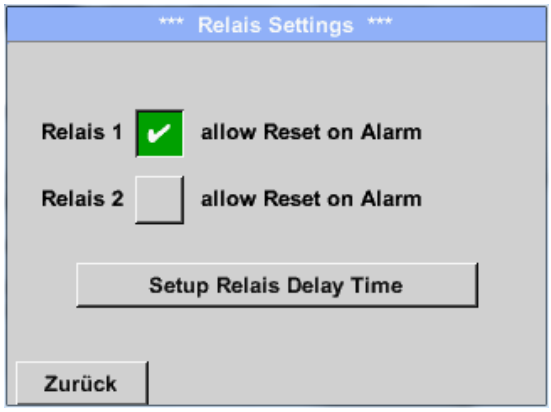
With the *TCP* and *RTU* buttons, it is possible to change the data format (word order).

The default value for both modes is: C-D-A-B

Changes need to be confirmed by pressing the *pres…* button.

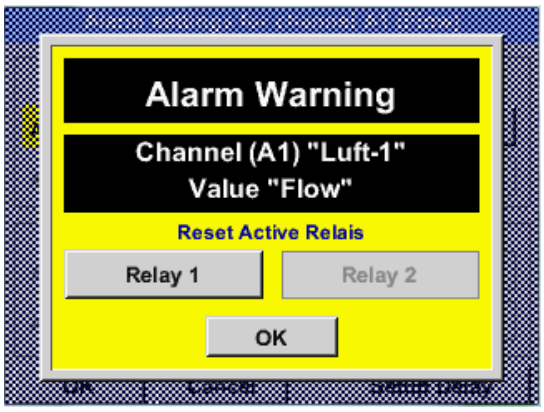
14.3.3.5 Relay settings

Main menu ➔ Settings➔ Device settings ➔Relay settings



When activating the *Relay* buttons, it is possible to allow for a relay cut-off by means of the indicated alarm message.

Settings are only possible in the password-protected menu.



A message is shown when an alarm occurs, here, e.g., alarm 1 (yellow) of channel A1.

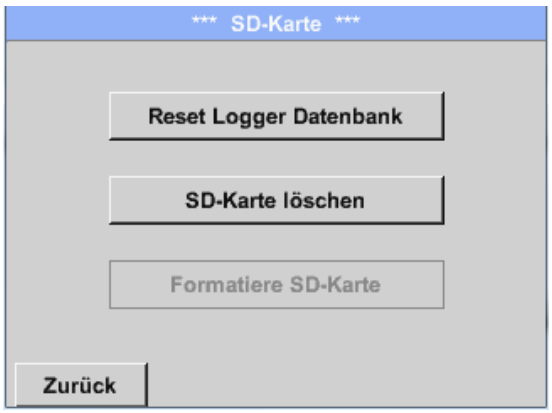
If it was allowed to cut off the relay under *Relay settings*, it can be cut off by pressing the *Relay 1* button.

The message can be suppressed by pressing the *OK* button.

14.3.3.6 SD card

Main menu ➔ Settings ➔ Device settings ➔SD card ➔ Reset logger data base

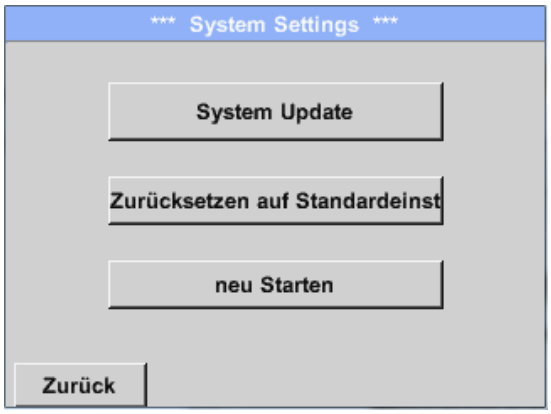
Main menu ➔ Settings ➔ Device settings ➔SD card ➔ Erase SD card



By pressing the *Reset logger data base,* the currently stored data are blocked from use in the BDL. However, the data remain stored on the SD card, and are available for external use.

By pressing the *Erase SD card* button, all of the data are completely deleted from the SD card.

14.3.3.7 System



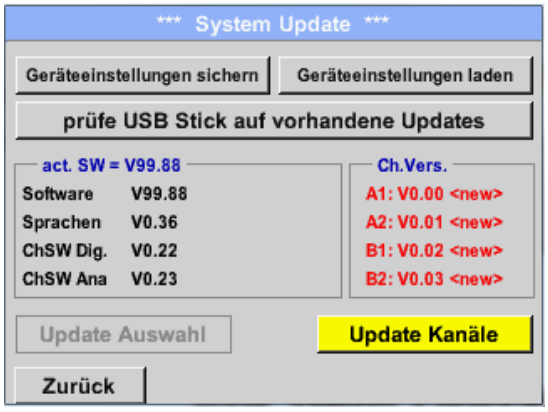
Overview of the system settings

Important:
Prior to the update, save the device settings on a USB stick!

Note:
The button with the yellow background indicates which update option is available.

14.3.3.7.1 System update

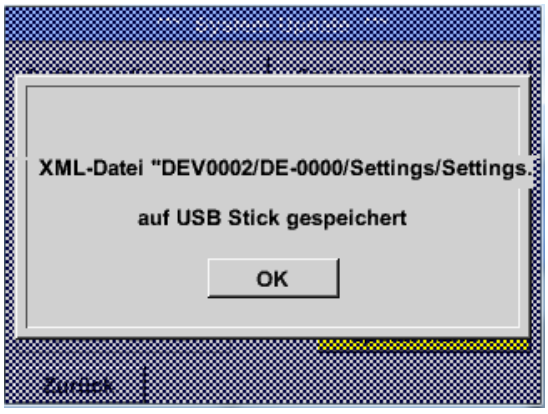
Main menu ➔ Settings ➔ Device settings ➔ System ➔ System update



Overview of the *system update* functions

14.3.3.7.2 Securing the device settings

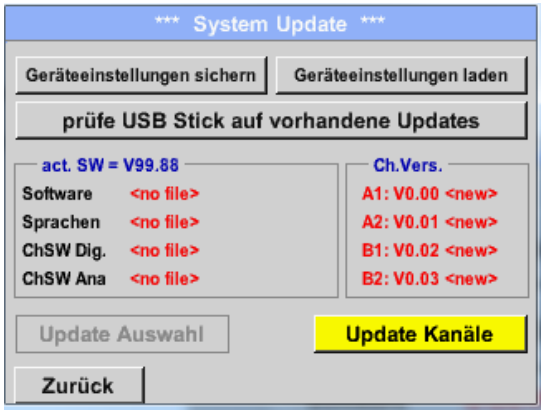
Main menu ➔ Settings ➔ Device settings ➔System update ➔ Securing the device settings



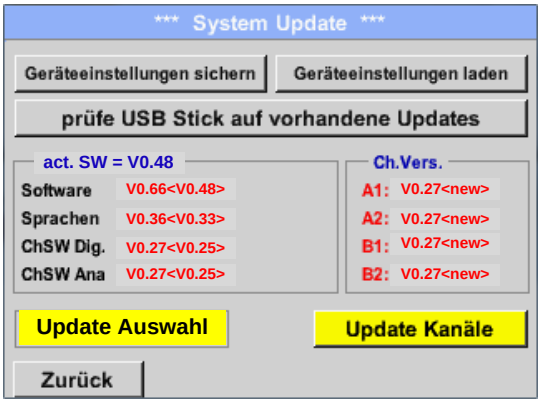
Stores the *channel and system settings* in an XML format on a USB stick.

14.3.3.7.3 Check for available updates (USB)

Main menu ➔ Settings ➔ Device settings ➔ System update ➔ Check USB stick for available updates



When, after having pressed the *Check USB stick for available updates* button, the following messages appear in the window, the METPOINT® BDL compact is not correctly connected with the USB stick or no data are available.



When the METPOINT® BDL compact is correctly connected with the USB stick, the lettering is black, and on the left, the different update options are indicated.

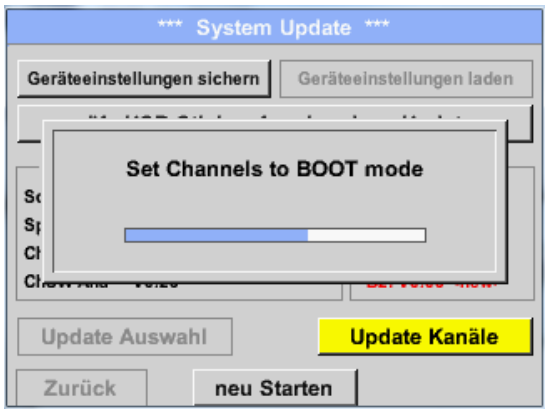
To the right of these, the current (old) and the newly available (new) versions are shown.

Main menu ➔ Settings ➔ Device settings ➔System ➔System update ➔ Update selection

Important:

If, subsequent to the update, the *Restart* button appears, it must be pressed to restart the METPOINT® BDL COMPACT!

Main menu ➔ Settings ➔ Device settings ➔System ➔System update ➔ Update channels



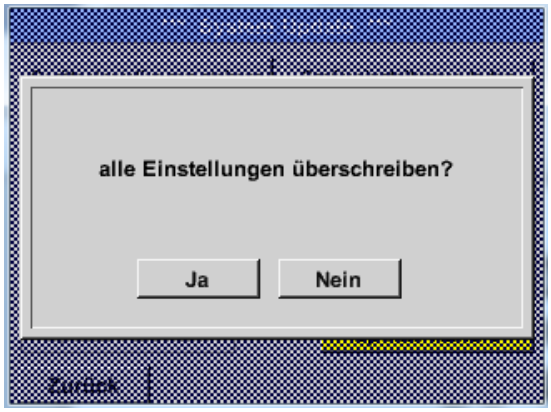
Update for the *channels* of the METPOINT® BDL compact.

Important:

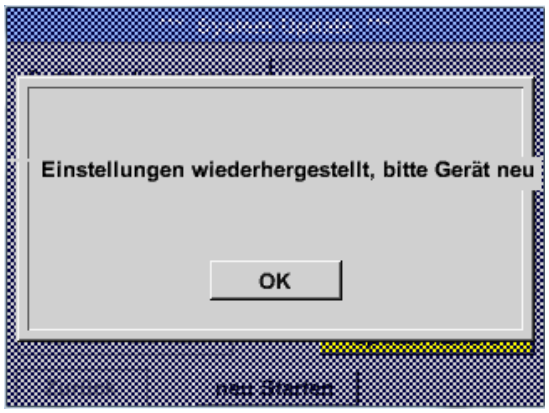
If, subsequent to the channel update, the *Restart* button appears, it must be pressed to restart the METPOINT® BDL compact!

14.3.3.7.4 Loading device settings

Main menu ➔ Settings ➔ Device settings ➔System ➔ Loading device settings



By means of the *Loading device settings* button, the channel and system settings can be reset to the status of when it was last saved.

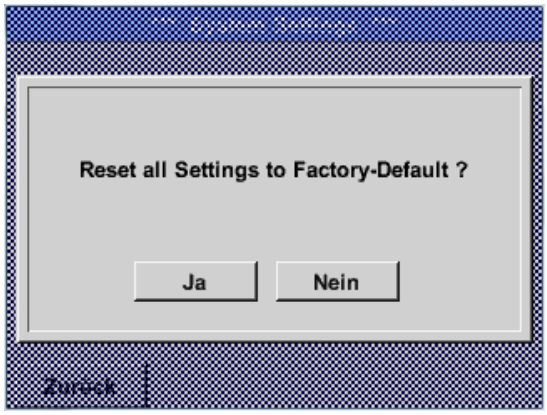


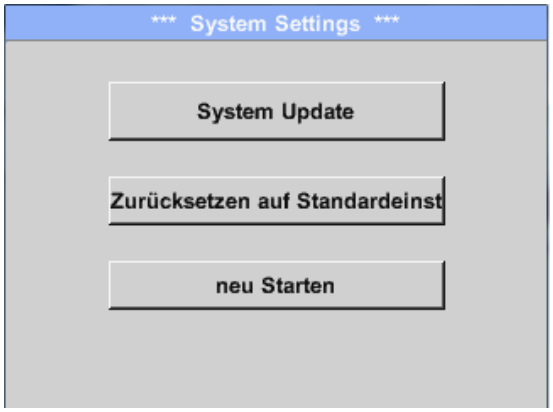
Important:

When the channel and system settings have been reset, the *OK* button and afterwards the *Reset* button must be pressed.

14.3.3.7.5 Reset factory defaults

Main menu ➔ Settings ➔ Device settings ➔ System ➔ Reset factory defaults





If required, the BDL can be re-booted by pressing the *Restart* button.

14.3.3.8 Calibrating the touch screen

Main menu ➔ Settings ➔ Calibration touch screen

If required, the screen calibration can be changed here.

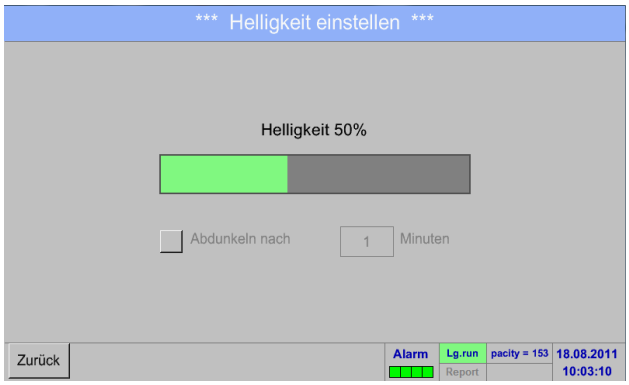
Press *Calibrate,* and a calibration cross will appear 1. on the upper left, 2. on the lower right, and 3. in the middle. These crosses must be pressed consecutively.

When calibration is completed and the indication is averaged, confirm with *OK*.

If this is not the case, calibration can be repeated by means of *Cancel* and by pressing *Calibrate* again.

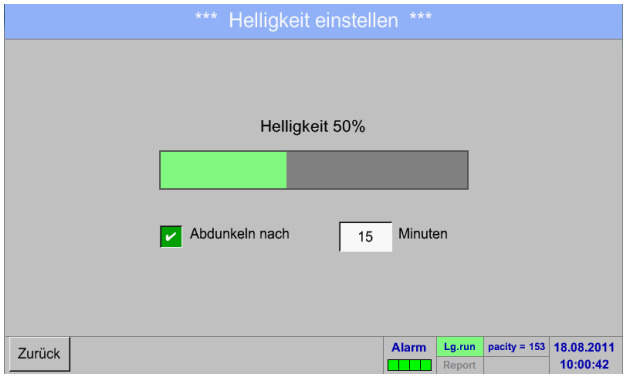
14.3.4 Brightness

Main menu ➔ Settings ➔ Brightness



Here, the desired *brightness* (15 … 100%) of the display can directly be set.

E.g.: *brightness* to 50%.



By means of the *Darken-after* button, the *brightness* can be reduced to a minimum at the end of a time interval to be defined (here after 15 minutes).

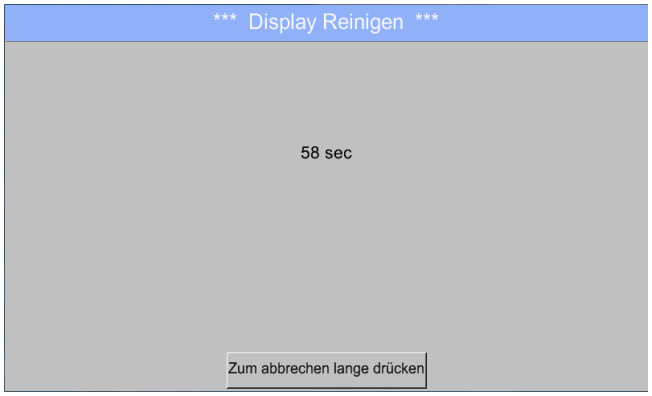
As soon as the dimmed screen is activated again, the *brightness* automatically goes back to the value that was last set prior to dimming.

Note: at the first touch, the *brightness* in our example is reset to 50%. Afterwards, "normal" functional operation is possible again.

<u>Important:</u> when the *Darken-after* button is not activated, the backlighting is continuously on at the currently set *brightness*.

14.3.5 Cleaning

Main menu ➔ Settings ➔ Cleaning



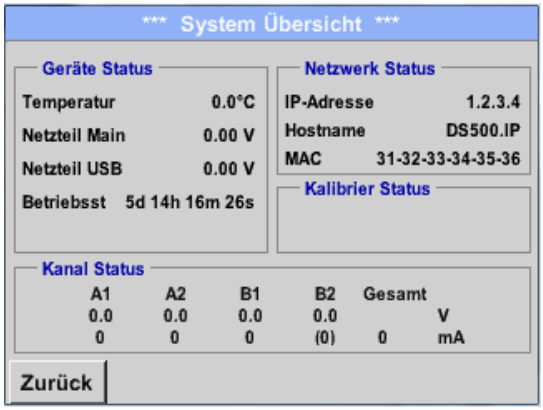
This function can be used to clean the touch panel during the running measurements.

If one minute does not suffice for the cleaning process, the procedure can be repeated at all times.

If the cleaning process is completed before, it can be stopped by pressing the *Long-press-for-canceling* button for one to two seconds.

14.3.6 System overview

Main menu ➔ Settings ➔ System overview



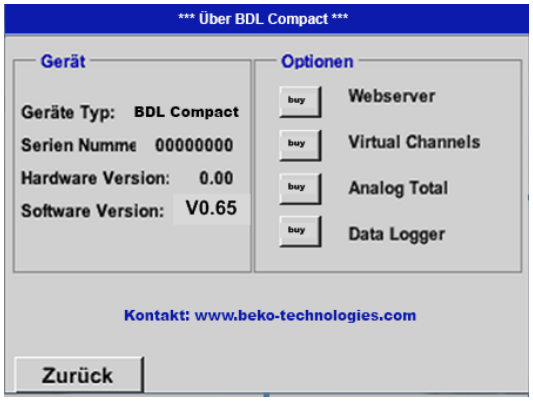
The *system overview* menu item provides information on the applied voltages and currents of the individual and the entire *channels,* as well as on the voltage supply of the *power supply units*.

In addition, the most important network information can be found here, such as the *IP*, *host,* and *MAC*.

Moreover, one can always see, by means of the *operating hours*, for how long the METPOINT® BDL compact was in operation on the whole.

14.3.7 About METPOINT® BDL compact

Main menu ➔ Settings ➔ About METPOINT® BDL compact



Short description of the *hardware* and *software version*, and the *serial number* of the METPOINT® BDL compact.

Under **options,** you can also acquire four different functions, if this was not done during the ordering.

14.3.8 Virtual channels (optional)

The "virtual channels" option offers four additional channels (no HW channels) for the description of calculations regarding HW channels, virtual channels, and freely definable constants with each other.

Per each virtual channel, up to eight value calculations with three operands each and 2 operations can be realized.

Possible applications are the calculations of:

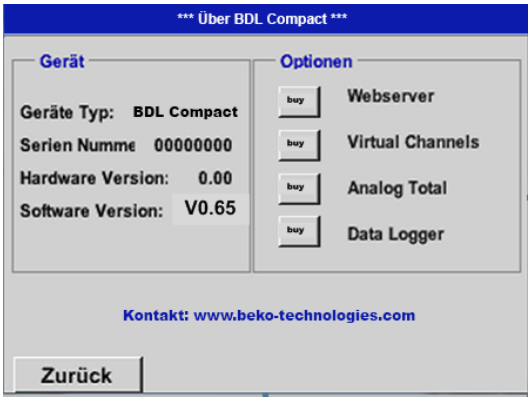
- The specific performance of a system
- Total consumption of the system (several compressors)
- Energy costs etc.

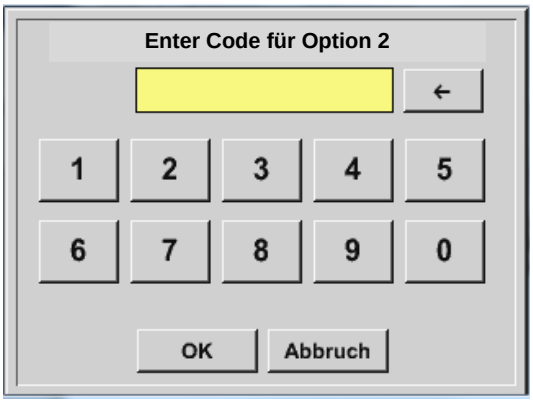
For a calculation example and description of the "specific performance", please refer to Section 12.2.7.6.

14.3.8.1 Activate the option "virtual channels"

After having acquired the "virtual channels" option, the latter needs to be activated first.

Main menu ➔ Settings ➔ Via METPOINT® BDL compact



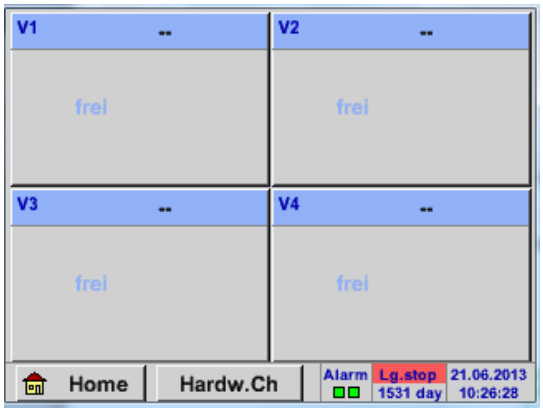


D By pressing the *Buy* button for "virtual channels", you will be requested to enter the activation code.

Please enter your activation code into the text field and activate it by pressing the *OK* button.

14.3.8.2 Virtual channels settings

Main menu ➔ Settings ➔ Sensor settings ➔ Virtual channels

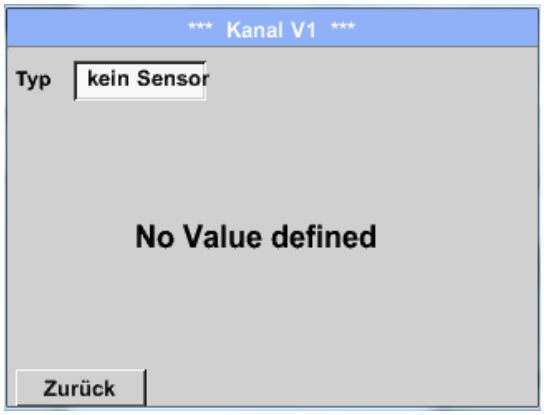


After having activated the "virtual channels" button in the sensor setting menu, an overview of the available four channels will appear.

Note:
Channels are not preset as a standard.

14.3.8.3 Selection of the sensor type

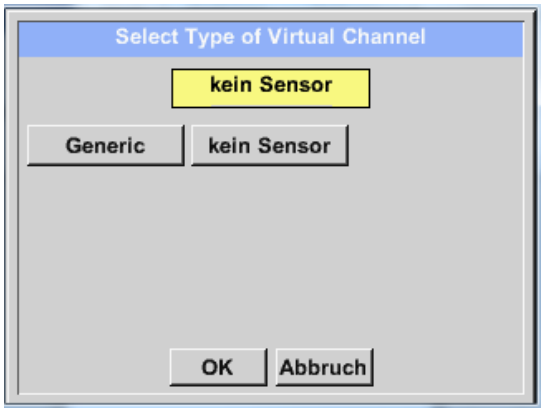
Main menu ➔ Settings ➔ Sensor settings ➔ Virtual channels ➔ V1



If no sensor was configured yet, the *Type* **no sensor** will appear.

Pressing the text field *Type* **no sensor** will enable you to go to the selection list of sensor types (see next step).

Main menu ➔ Settings ➔ Sensor settings ➔ Virtual channels ➔ V1➔ Type text field



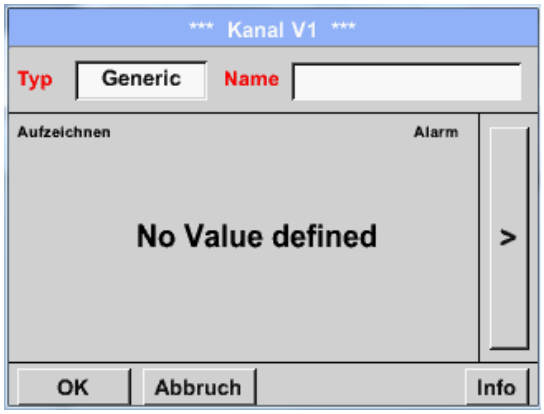
If no sensor was configured yet, the *Type* **no sensor** will appear.

By pressing the **Generic** button, the virtual channel is selected.

By pressing the **No sensor** button, the channel is reset.

The selection is confirmed by pressing the **OK** button.

Main menu ➔ Settings ➔ Sensor settings ➔ Virtual channels ➔ V1 ➔ Name text field



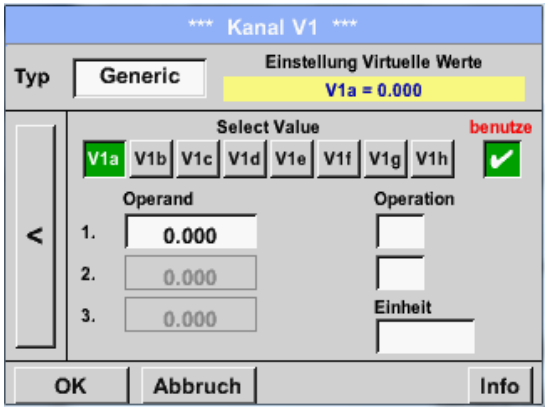
Now, a *name* can be entered.

14.3.8.4 Configuration of the individual virtual values

Per each individual channel, up to eight virtual values can be calculated which need to be activated separately:

14.3.8.4.1 Activation of the individual virtual values

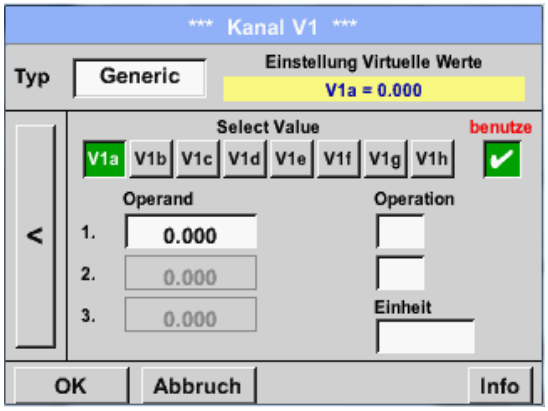
Main menu ➔ Settings ➔ Sensor settings ➔ Virtual channels ➔ V1➔ Right arrow (2nd page) ➔ V1a➔ Use



A virtual value is activated by pressing the respective *Value button*, for example *V1a* with subsequent actuation of the *Use button.*

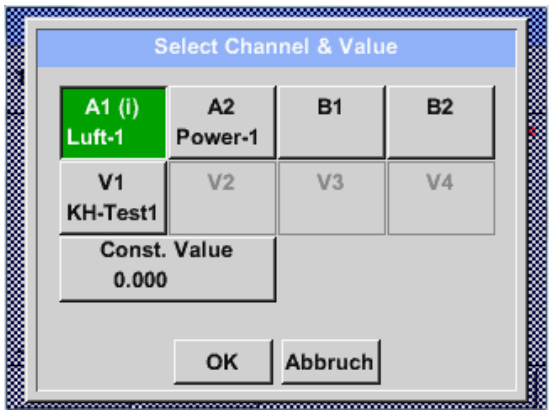
14.3.8.4.2 Definition of the operand

Main menu ➔ Settings ➔ Sensor settings ➔ Virtual channels ➔ V1 ➔ Right arrow (2nd page) ➔ 1st operand

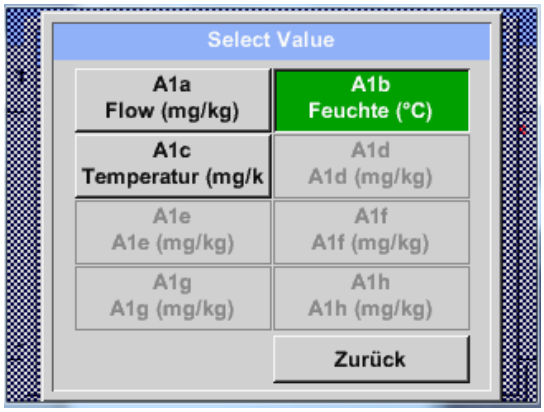


By pressing the *1st operand* field, you will go to a selection list with the available hardware channels, virtual channels, and constant values.

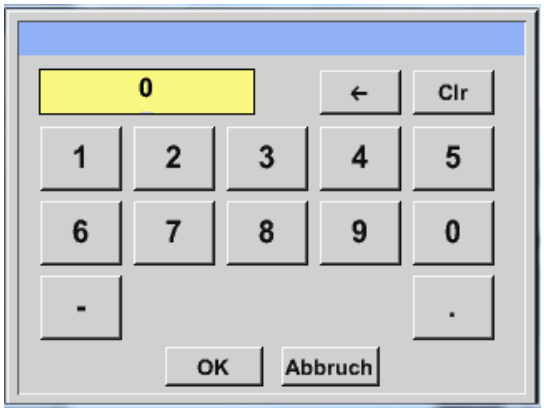
Main menu ➔ Settings ➔ Sensor settings ➔ Virtual channels ➔ V1 ➔ 1st operand ➔ A1



By pressing a hardware or virtual channel button, e.g. *A1*, a selection list will open, showing the measuring channels or measured values that are available per channel, including defined virtual channels.



By pressing the desired channel button, e.g. *A1b*, the selection is accepted.



If the *Const. value* button was pressed, the value needs to be determined via the numeric keypad. By pressing the *OK* button, the value is accepted.

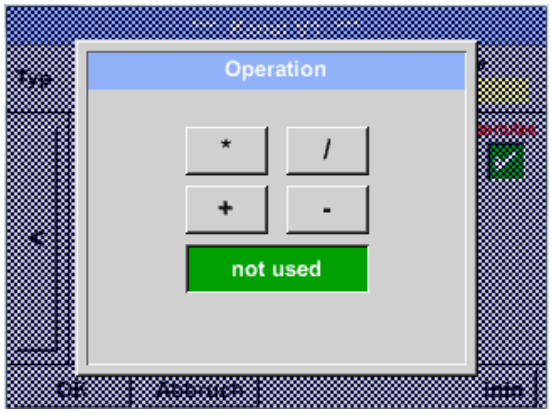
By means of buttons ← and *Clr,* the values can be corrected.

Button ← erases the last character
Button *Clr* erases the entire value

The same procedure applies to all operands (1st operand, 2nd operand, and 3rd operand).

14.3.8.4.3 Definition of the operations

Main menu ➔ Settings ➔ Sensor settings ➔ Virtual channels ➔ V1➔ Right arrow (2nd page) ➔ 1st operation



By pressing the text field *1st operation,* a list with the available mathematic operands will appear.

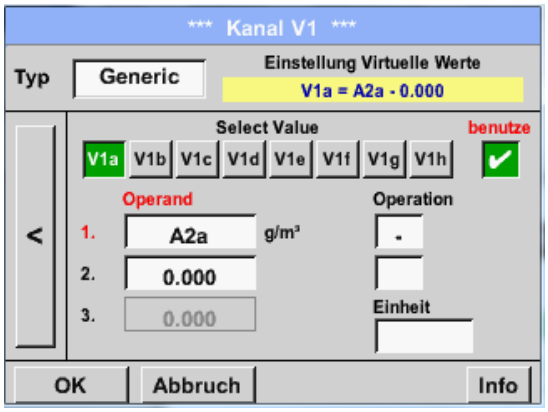
Selection and acceptance of the operand is implemented by pressing the desired button.

Actuating the *Not used* button will deactivate the operation with the related operator.

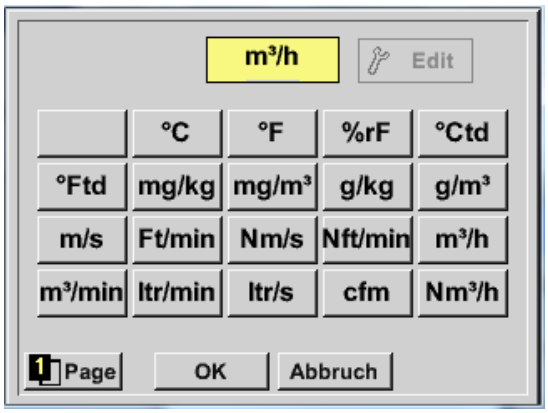
The same procedure applies to both operators (1st operation and 2nd operation)

14.3.8.4.4 Definition unit

Main menu ➔ Settings ➔ Sensor settings ➔ Virtual channels ➔ V1➔ Right arrow (2nd page) → Unit



By pressing the text field *Unit*, a list with the available units will appear.

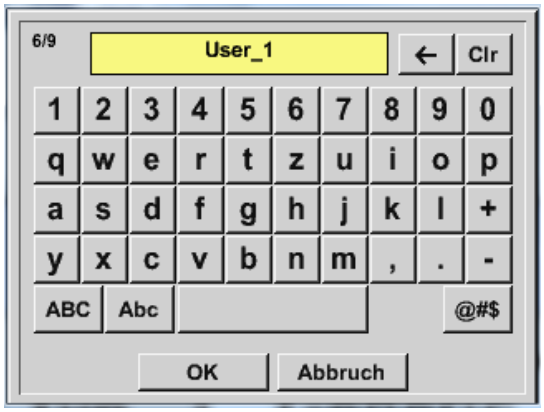


The selection of the unit is implemented by pressing the desired unit button. The unit is accepted by pressing the *OK* button.

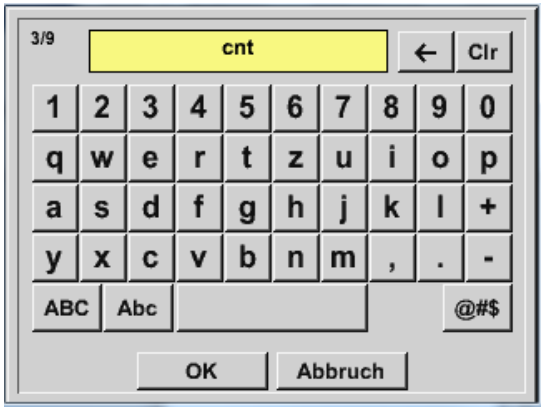
A change between the individual list pages is effectuated by pressing the *Page* button.

In the event that units cannot be selected, you can create the unit yourself.

For this purpose, one of the free pre-defined *User_x* user buttons must be chosen. Paging is effectuated with the *Page* button.



To enter the new unit, press the *Edit* button.



Define the unit and accept with *OK*.

By means of buttons ← and *Clr,* the entry can be corrected.

Button ← erases the last character
Button *Clr* erases the entire value

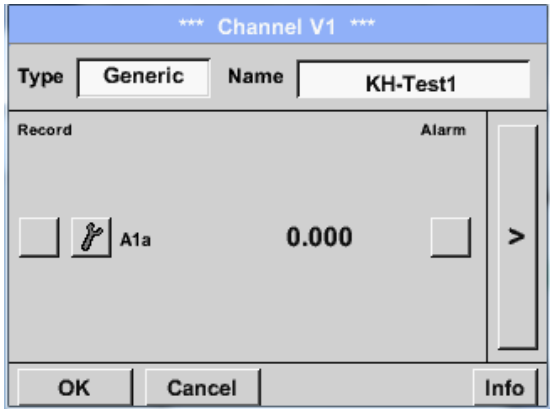
Important

When all of the values and operators are applied, calculations with three values and 2 operands are possible, which are solved according to the following formula:

Example: **V1a = (1st operand 1st operation 2nd operand) 2nd operation 3rd operand**
V1a = (A1c – A2a) * 4.6

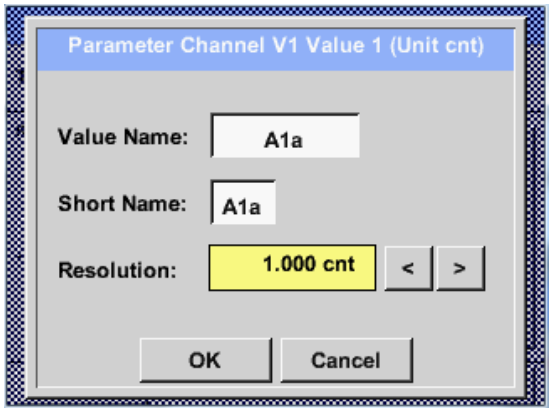
14.3.8.5 Resolution of the decimal places – designating and recording data values

Main menu ➔ Settings ➔ Sensor settings ➔ Virtual channels ➔ V1➔ Tool button



The *resolution* of the decimal places, *short name* and *value name* can be found below the *Tool button*

With the *Recording button*, the data are selected which are stored at an **activated data logger**.



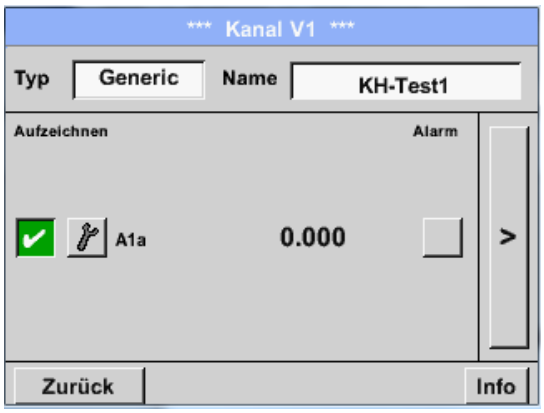
For the *value* to be recorded, a *name* with 10 characters can be entered in order to simplify its identification at a later moment in the menu items *Graphics* and *Graphics/current values*.

Otherwise, the designation would be *V1a*, for example.

V1 is the channel name and *a* the first measured value in the channel, *b* would be the second, and *c* the third.

The *resolution* of the decimal places is easily adjustable by pressing right and left (0 to 5 decimal places).

Main menu ➔ Settings ➔ Sensor settings ➔ Virtual channels ➔ V1➔ Recording button



With the *Recording* buttons, the measuring data are selected which are stored at an **activated data logger**.

Caution:

Prior to recording the selected measuring data, the data logger must be activated subsequent to the completion of the settings (see Chapter 12.2.1.2 Logger settings (data logger)

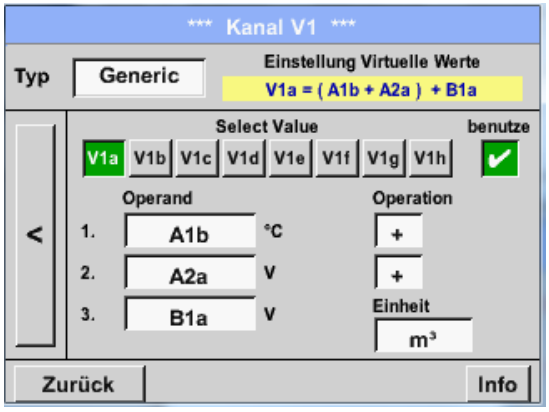
See also Chapter 12.2.2.2 Denoting the measuring data and 12.2.2.3 Recording measuring data

14.3.8.6 Example calculation "specific performance"

As an example, a compressor plant with three compressors is taken as the basis.
Consumption measurement in each case with an FS109 consumption probe at inputs A1 - B1, and an electric meter at input B2.

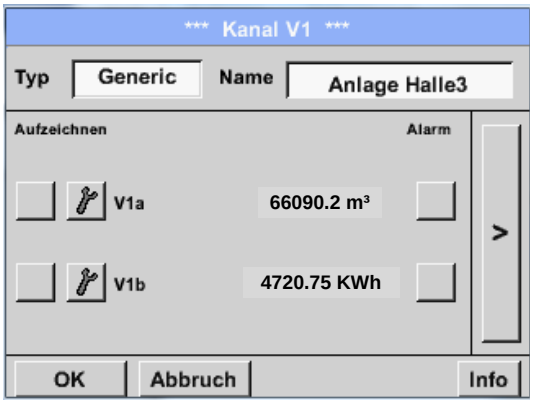
The total consumption of air and energy, and the "specific performance" of the entire plant are calculated.

Main menu ➔ Settings ➔ Sensor settings ➔ Virtual channels ➔ V1➔ Right arrow (2nd page) ➔ V1a ➔ Use



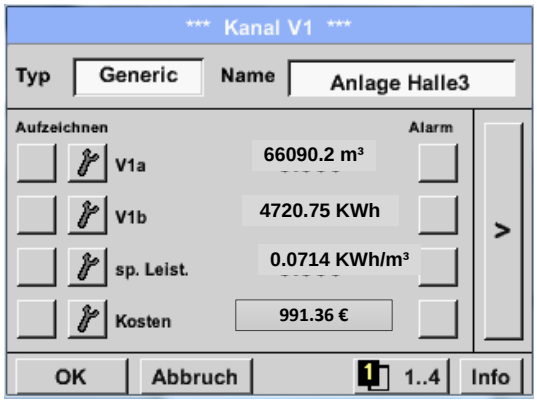
Selection and entry of the operands and operations see Chapter 12.2.6.4.2 and Chapter 12.2.6.4.3.

The result for *V1a* is the sum of consumption sensors *A1* + *A2* + *B1*, see result zone. In this example, it is *66,090.2 m³*



Result *V1b* is the power consumption read from the electric meter

V1a → total compressed-air consumption
V1b → power consumption



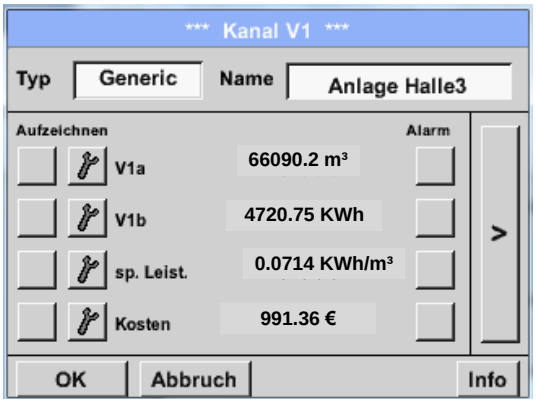
Here, the calculation of the *specific performance* is implemented with

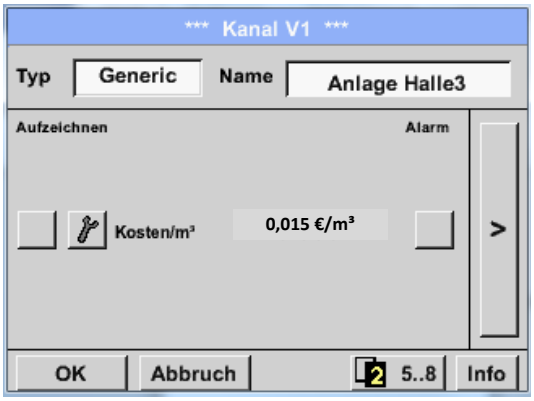
V1c = *V1b*/*V1a* with 0.072 KWh/m³ as the result.

The calculation of the overall costs is effectuated with

V1d = *B2* * *0.21* with 991.36 € as the result.

The calculation of the energy costs per m³ of generated air is effectuated with *V1e* = *V1c* * *0.21*





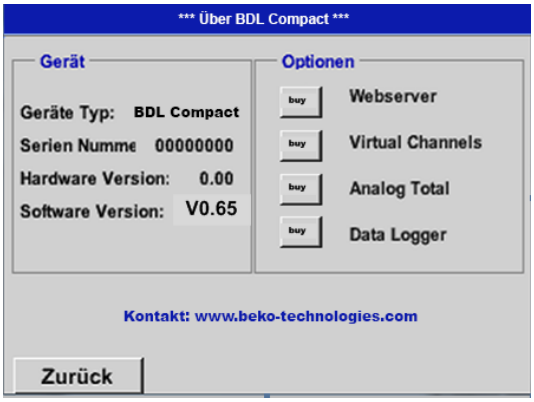
14.3.9 Analog total (optional)

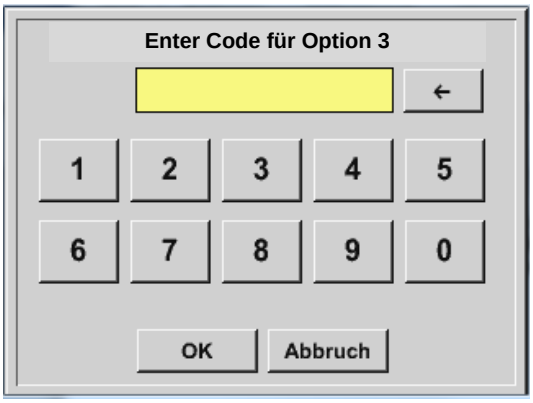
The "**analog total**" option offers the possibility of a consumption determination also for sensors with analog outputs, e.g.: 0-1/10/30 V or 0/4 – 20 mA.

14.3.9.1 Activating the "analog total" option

Subsequent to the acquisition of the "analog total" option, the latter first needs to be activated.

Main menu ➔ Settings ➔ via METPOINT® BDL compact





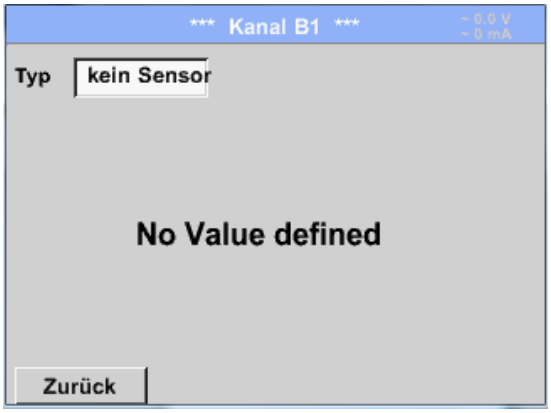
By pressing the *Buy* button for "analog total", you will be requested to enter the activation code.

Please enter your activation code into the text field, and activate by pressing the *OK* button.

14.3.9.2 Selection of the sensor type

See also Chapter 12.2.2.8 Configuration of analog sensors

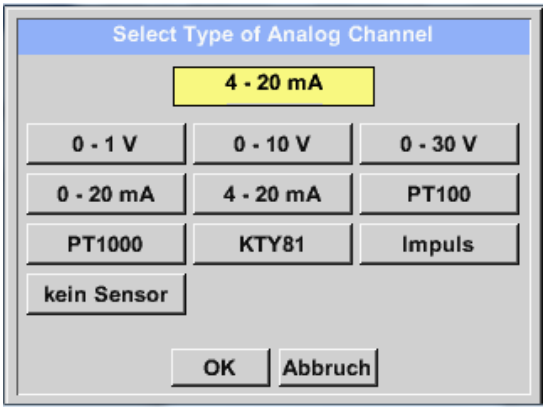
Main menu ➔ Settings ➔ Sensor settings ➔ A1



If no sensor was configured yet, the, *Type* **no sensor** will appear.

By pressing the text field *Type* **no sensor**, you will go to the selection list of the sensor types (see next step).

Main menu ➔ Settings ➔ Sensor settings ➔ B1➔ Type text field

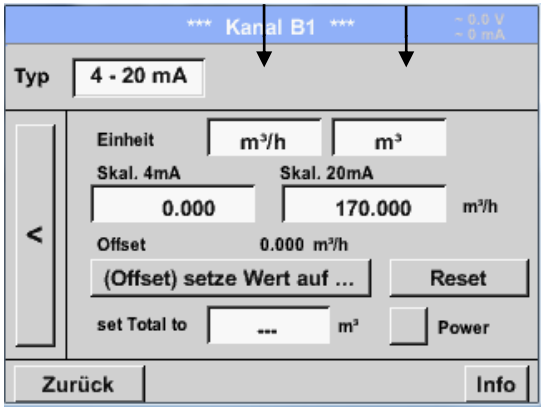


Selection of the required sensor type by pressing the respective button, here, for example 4-20 mA.

Confirmation and acceptance with the **OK** button.

Unit

Measured value Consumption



Selection of the units by pressing the respective **Unit, Measured value** or **Consumption rate** text fields.

Enter scale values for 4 mA and 20 mA, here 0 m³/h and 170m³/h.

If required, it is possible to enter a start value for the consumption rate, for the takeover of a counter reading. For this, enter the value into the Set total to text field.

Confirmation of the entries by pressing the OK button.

Note:

The text field "unit-consumption" is only editable in case of measurement values (units) with volume or amounts per time unit and thus also the consumption calculation.

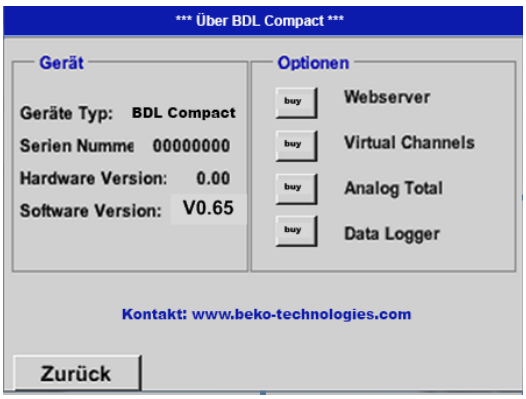
For the marking and setting of the text fields see also Chapter 12.2.2.7 Marking and setting text fields.

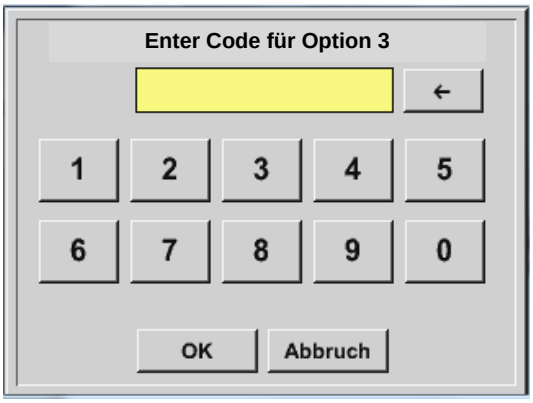
14.3.10 Web server (optional)

Subsequent to the acquisition of the "Web server" option, the latter needs to be activated first.

14.3.10.1 Activating the "web server" option

Main menu ➔ Settings ➔ Via METPOINT® BDL compact





By pressing the *Buy* button for "analog total ", you will be requested to enter the activation code.

Please enter your activation code into the text field and activate it by pressing the *OK* button.

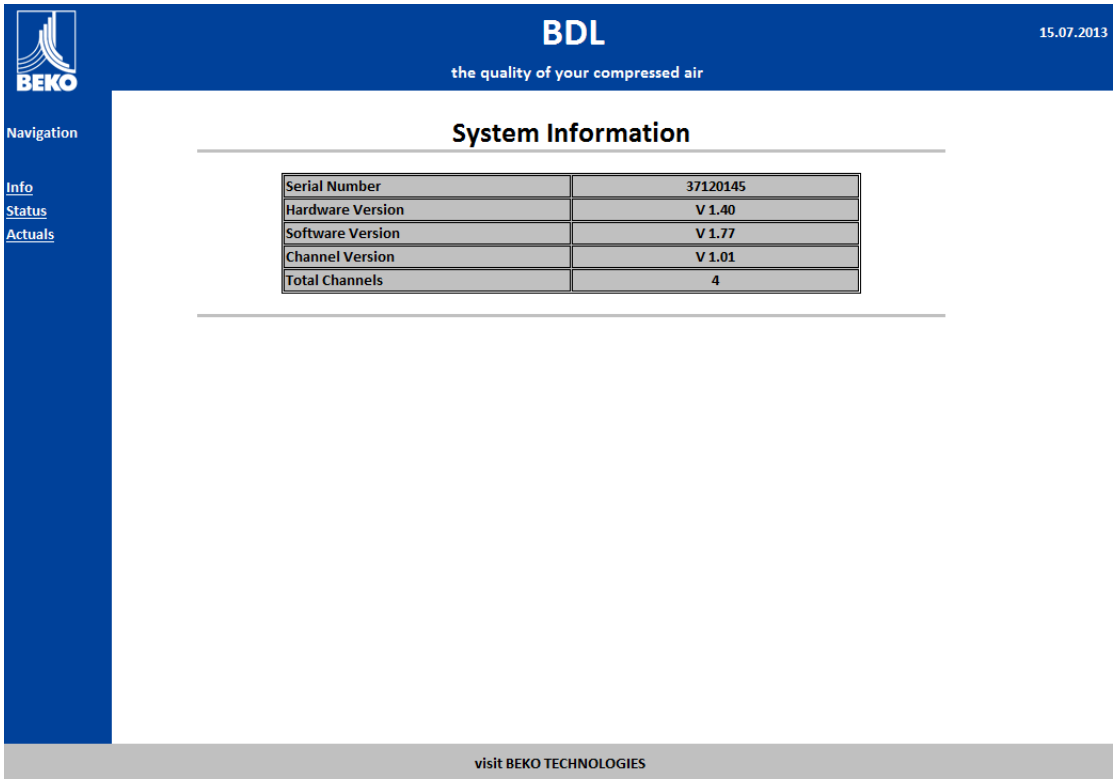
With an Internet Explorer and the IP address of your BDL compact, you can check the following options worldwide.

http:// <IP-Adresse des BDL compact>

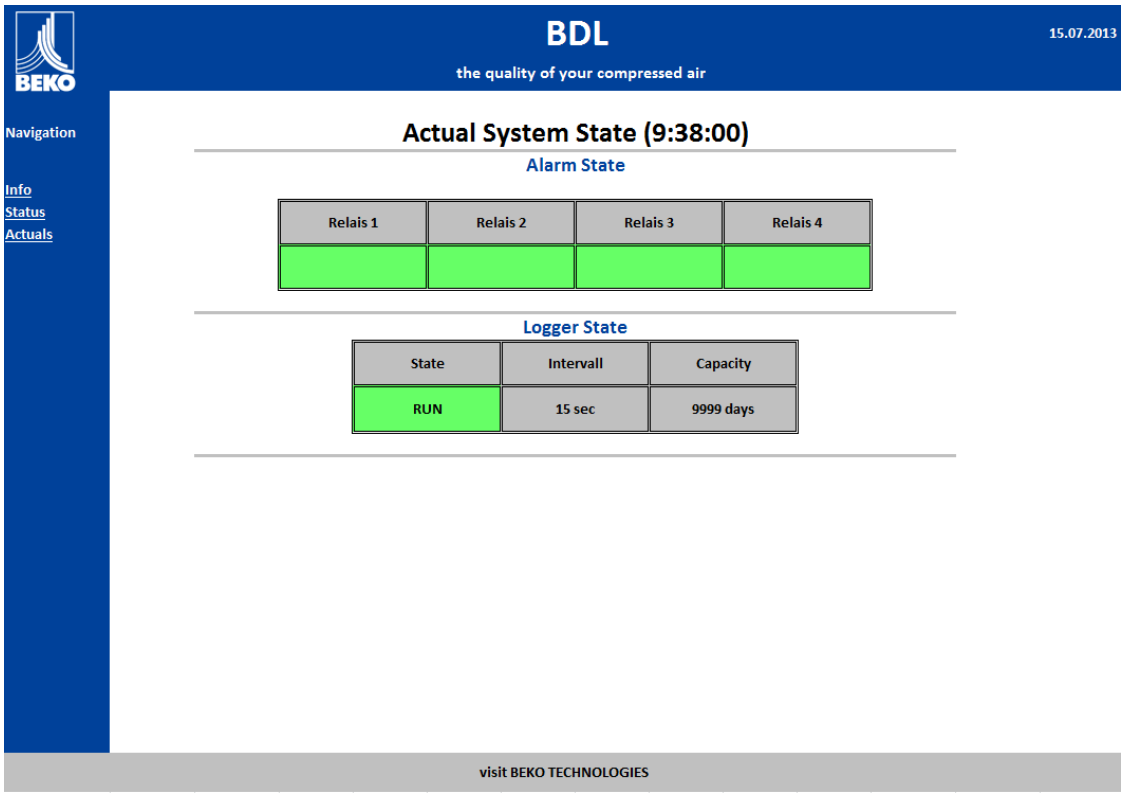
Remark:

You will find the IP address of the BDL compact in Chapters 12.7.4 System overview and 12.2.4.3 Network settings.

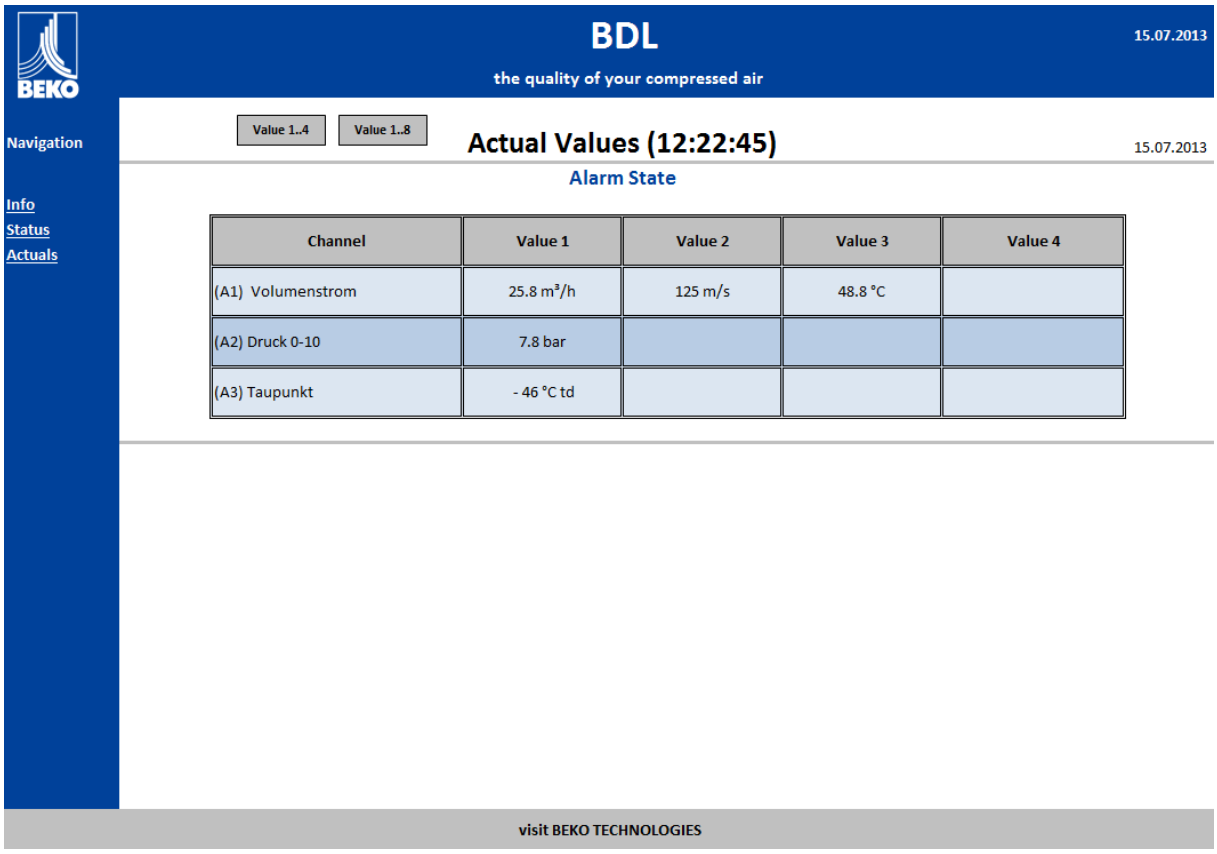
Info:


BDL
the quality of your compressed air
15.07.2013
Navigation
Info
Status
Actuals
System Information
Serial Number 37120145
Hardware Version V 1.40
Software Version V 1.77
Channel Version V 1.01
Total Channels 4
visit BEKO TECHNOLOGIES

Status:


BDL
the quality of your compressed air
15.07.2013
Navigation
Info
Status
Actuals
Actual System State (9:38:00)
Alarm State
Relais 1
Relais 2
Relais 3
Relais 4
Logger State
State
Intervall
Capacity
RUN
15 sec
9999 days
visit BEKO TECHNOLOGIES

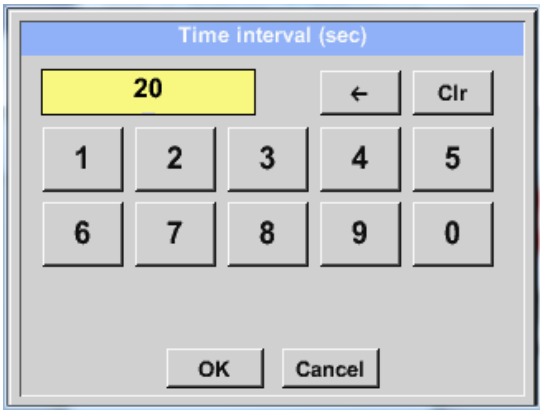
Actual Values:



14.3.11 Data logger settings

Main menu ➔ Settings ➔ Logger settings

In the uppermost row, the pre-defined *time intervals* 1, 2, 5, 10, 15, 30, 60, and 120 seconds can be chosen for the recording.



A deviating individual *time interval* can be entered into the text field with the white background on the upper right where the currently set *time interval* is always indicated (here, for example, 20 seconds).

Note:

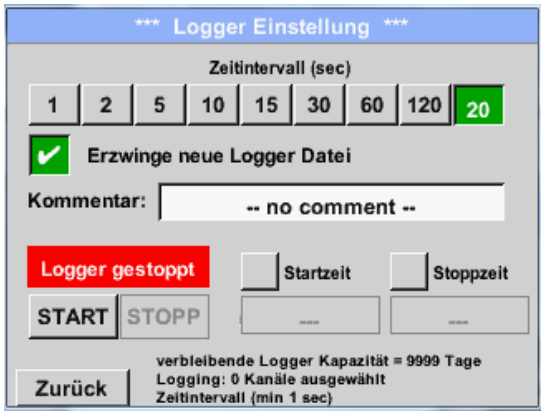
The largest possible *time interval* is 300 seconds (five minutes).

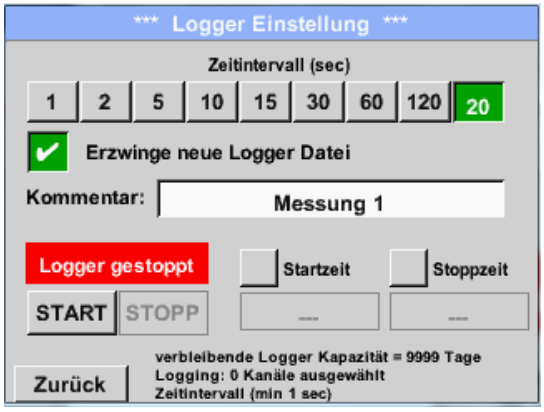
Note:

When more than 12 measuring data are simultaneously recorded, the smallest possible data logger interval is two seconds.

When more than 25 measuring data are simultaneously recorded, the smallest possible data logger interval is five seconds.

Main menu ➔ Settings ➔ Logger settings ➔Enforce-new-logger-file button
or
Main menu ➔ Settings ➔ Logger settings ➔Force-new-record-file button ➔ Comment text field





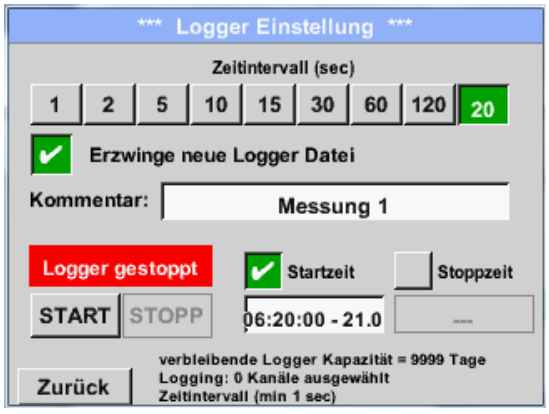
By pressing the *Force-new-record-file button*, a new recording file is created, and with the selection of the *Comment* text field, a name or comment can be entered.

Important:

When a new recording file is to be created, the *Force-new-record-file* button must be activated.

Otherwise, the recording file that was created last will be used.

Main menu ➔ Settings ➔ Logger settings ➔ Start time button



By pressing the *Start time* button and subsequently pressing the date/time text field below, the date and the *start time* of the data logger recording can be set.

Note:

When activating the *start time*, the latter will automatically be set to the current time plus one minute.

Main menu ➔ Settings ➔ Logger settings ➔ Stop time button

By pressing the *Stop time* button and subsequently pressing the date/time text field below, the date and the time for the end of the data logger recording can be set.

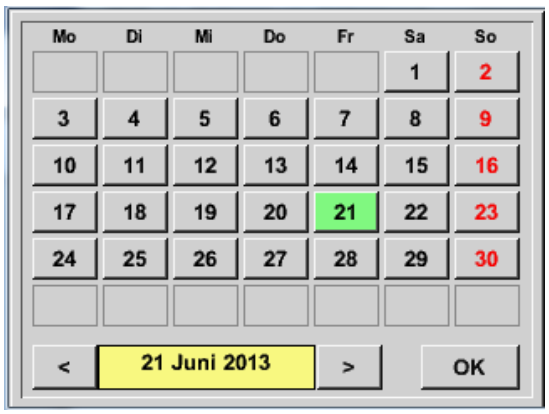
Note:

When activating the *stop time*, the latter will automatically be set to the current time plus one hour.

Main menu ➔ Settings ➔ Logger settings ➔ Start time button/Stop time button ➔ Date/time text field

After having pressed the *Date/time text field,* the input window will appear, in which the zone of the time or date which is highlighted in yellow can always be set or changed.

Main menu ➔ Settings ➔ Logger settings ➔ Start time button/Stop time button ➔ Date/time text field ➔ Cal button



By means of the *Cal* button, the desired date can easily be chosen from the calendar.

Main menu ➔ Settings ➔ Logger settings ➔ Start button

Subsequent to the *start* or *stop time* activation and the implemented settings, the *Start* button is pressed and the data logger is on *active*.

The data logger will start recording at the set time!

Main menu ➔ Settings ➔ Logger settings ➔Start button/stop button

The data logger can also be activated and deactivated without activated time settings, namely by means of the *Start* and *Stop buttons*.

On the lower left, it is indicated, how many values are being recorded, and for how long recording can be continued.

Note:

Settings cannot be changed when the data logger is activated.

Important:

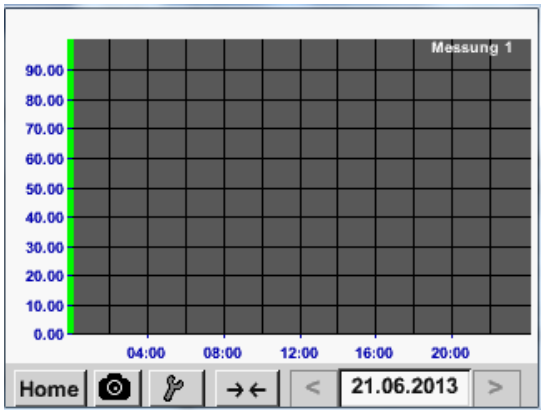
When a new recording file is to be created, the *Force-new-record-file* button must be activated. Otherwise, the recording file that was created last will be used.

14.4 Graphics

Main menu ➔ Graphics

Caution:
In the *graphics*, only those records can be displayed which are already completed!

The currently running recordings can be observed in *graphics/current values*.
(see Chapter 12.4 Graphics/current values*)*



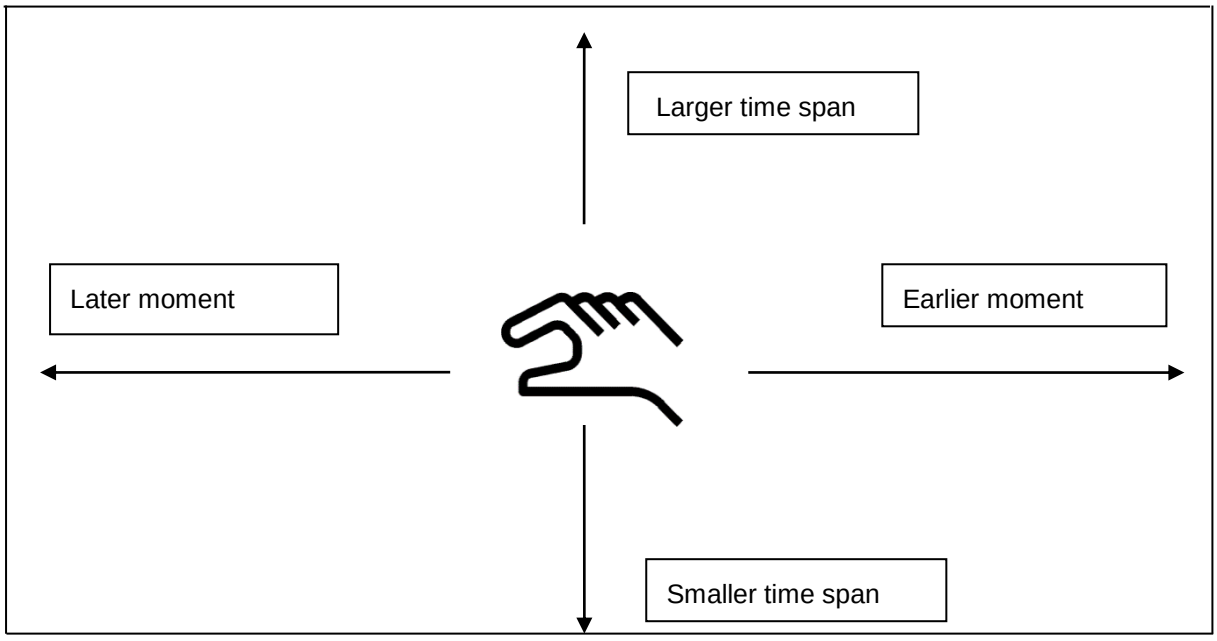
During the running measurement, no values are displayed!

Zoom and scroll possibilities in the time range of the *graphics*:

Maximally, an entire day can be displayed (24h).

The smallest possible range is displayed, depending on the time interval of the record.

Additional zoom and scroll possibilities in *graphics* and *graphics/current values*:



Main menu ➔ Graphics ➔ Date text field

By pressing the *Date* text field, the calendar will appear, from which the suitable date can easily be selected.

Here, the stored measuring data can be selected according to the *time (start and stop)*, *comment,* and *file name* (with an English date).

Main menu ➔ Graphics ➔ Set-up

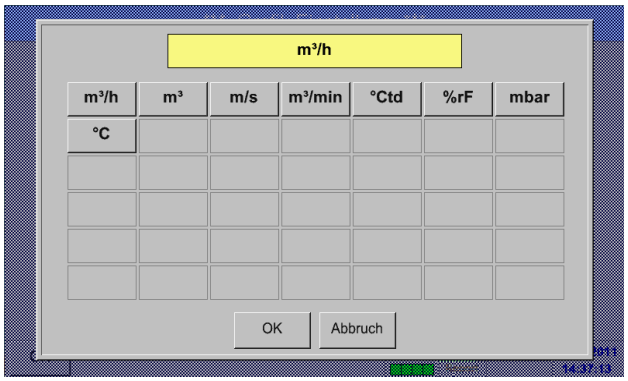
In the *set-up*, you can apply up to two different assignments to the y-axis, and select a *unit*, the y-axis scaling (min, max, *grid*), several channels (*curve*), and a *color*.

1. The *left* y-axis is already activated, and a *color* can now be assigned to it.

Note:

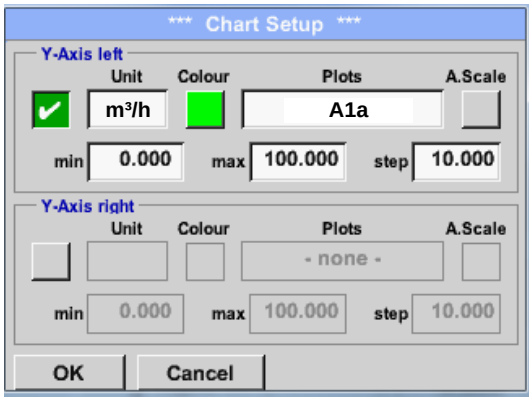
The grid setting is already possible at this moment but it is more useful at a later moment, for example when the recording was selected!

Main menu ➔ Graphics ➔ Set-up ➔ Unit text field



Here, the *unit* of the record to be displayed is selected from the menu.

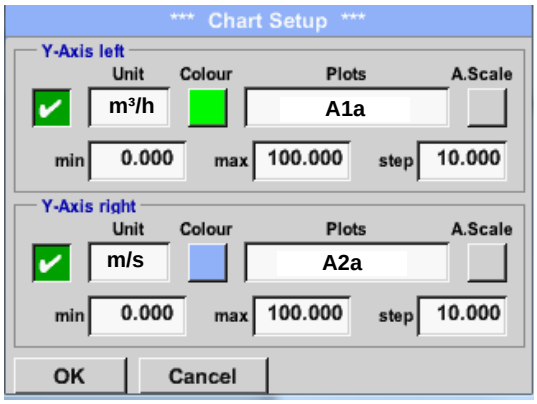
Main menu ➔ Graphics ➔ 



Now, the y-axis scaling with *min*, *max*, and *grid* can be set.

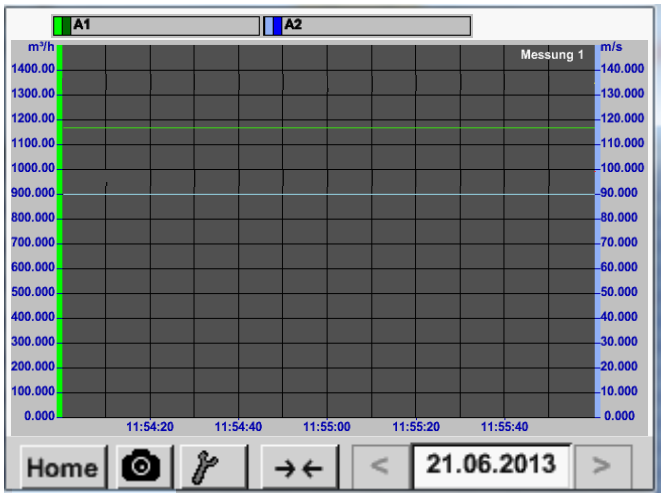
By means of the *A.Scale* button, a calculated autoscaling can be defined.

Assignments to the remaining y-axis are implemented in the same manner!



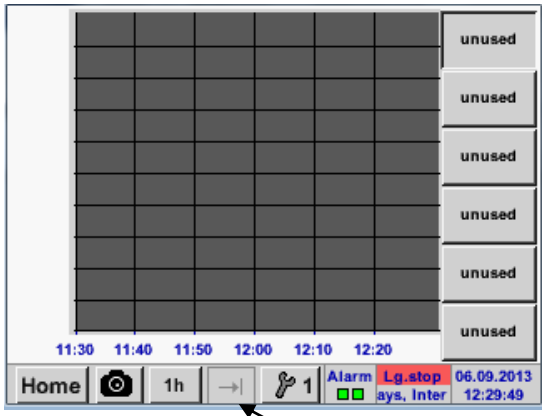
Two different grid settings with different *units* and *colors*.

Main menu ➔ Graphics



14.5 Graphics/current values

Main menu ➔ Graphics/current values



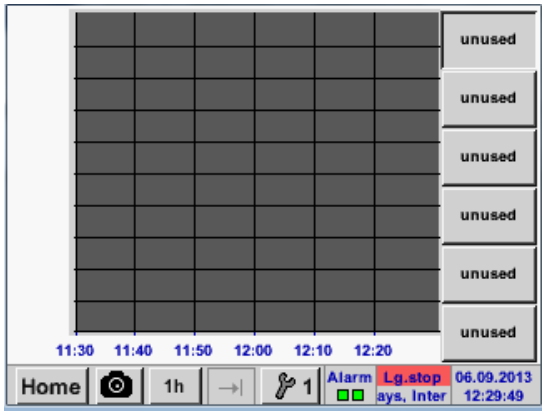
Here, one or several channels can be selected for the recording and representation of measuring data, for example from a dew point sensor or several different sensors.

After having pressed this button, the currently recorded measuring data are displayed in the current time range.

Fast access to the pre-defined time ranges of 24 h, 8 h, 1 h, 15 min, and 2 min.
At the push of a button, the graphics for the selected time range are displayed.

Screenshot button for the storage of the screen on a USB stick or SD card.

Main menu ➔ Graphics/current values ➔  #1- #6



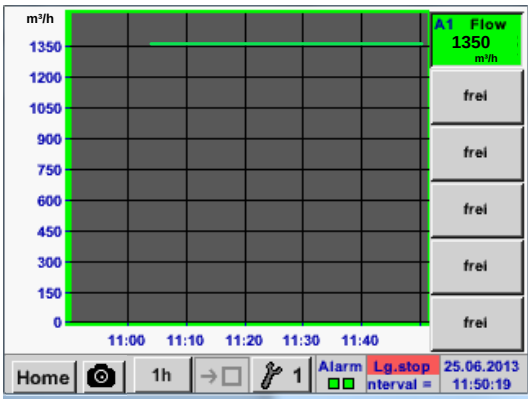
Under this menu item, up to four channels (depending on the version of the METPOINT® BDL compact) can be activated simultaneously and viewed under *Main menu ➔ Graphics/current*.

Here, channel A1 was selected.

For each channel, one value for the representation in the *graphics* can be selected.

In addition, like in the *Main menu ➔ Graphics*, a *color* and the y-axis scaling (*min*, *max*, *grid*) can be determined.

Main menu ➔ Graphics/current values



Channel A1:

The flow volume as *graphics.*

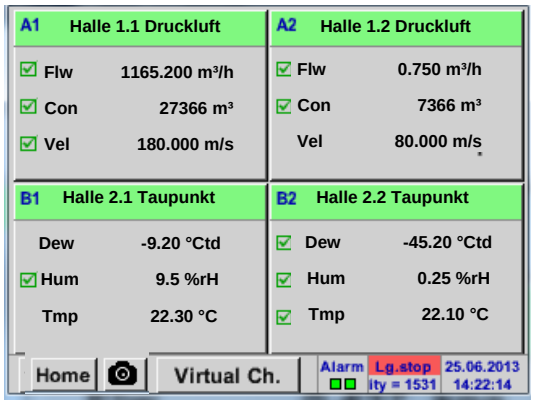
When several channels are occupied, all the graphics are displayed. It must be observed that only the y-axis of the selected channel is displayed in each case.

When no y-axis scaling is entered into the set-up, *min* is set to 0, *max* to 100, and *grid* to 10.

Assignments to the remaining set-ups are implemented in the same manner!

14.6 Channels

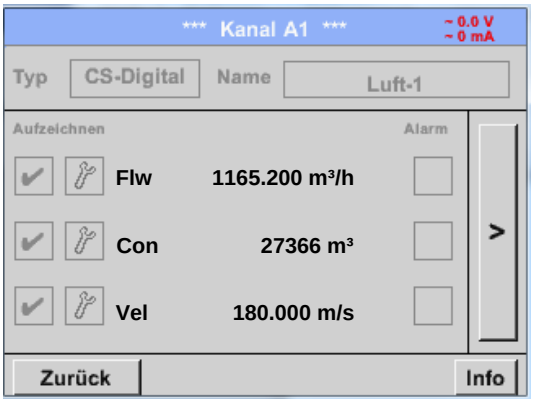
Main menu ➔ Channels



The *current values* view shows the current measured values of all the connected sensors.

In the event that the adjusted alarm limits are exceeded or underrun, the respective measured value flashes yellow (*alarm-1*) or red (*alarm-2*).

Main menu ➔ Channels➔ A1



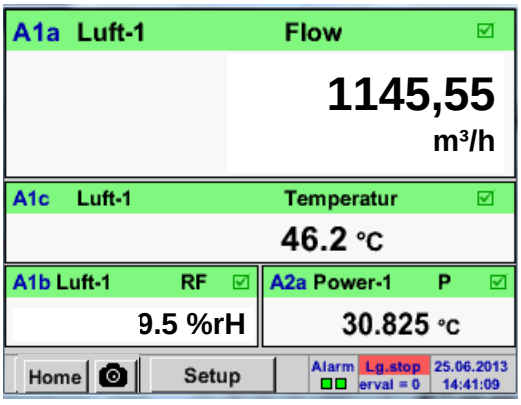
The individual channels can be selected and the settings viewed and checked, but **no** changes can be implemented here.

Note:

Changes must be effectuated in the *settings*!

14.7 Current values

Main menu ➔ Current values



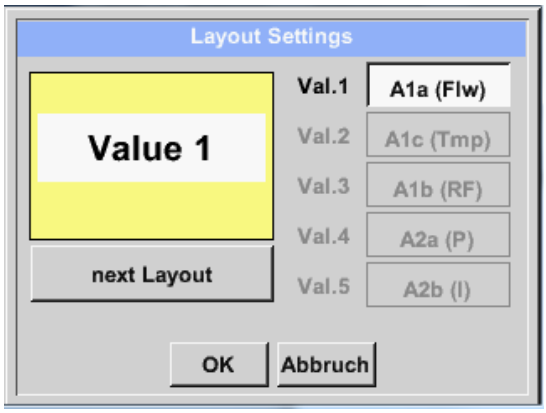
The *current values* view allows for the indication of 1 to 5 freely selectable measured values.

In the event that the adjusted alarm limits are exceeded or underrun, the respective measured value flashes yellow (*alarm-1*) or red (*alarm-2*).

Note:

Changes must be effectuated under *set-up*!

Main menu ➔ Current values ➔ Setup ➔ Next layout

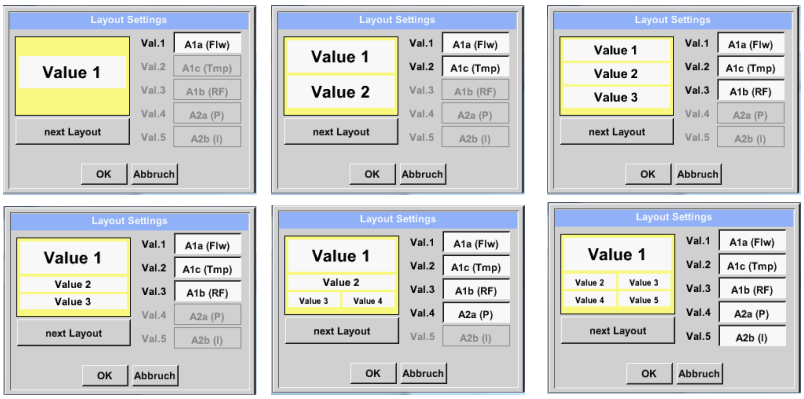


Here, the desired layout can be selected by pressing the *Next Layout* button.

It is possible to choose between six different layouts with the indication of between one and five measured values. Variants see below.

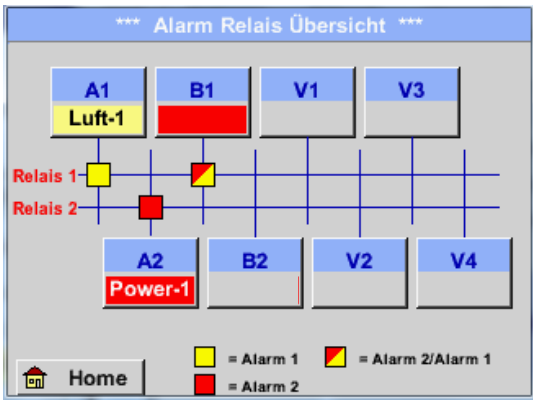
By pressing the fields with a white background (*Val.1 to Val.5*), the required measured values can be selected.

Possible variants:



14.8 Alarm overview

Main menu ➔ Alarm overview



In the *alarm overview*, you can immediately see whether the alarm is an *alarm-1* or an *alarm-2*.

This is also evident in other menu items:

Main menu ➔ Channels and in *Main menu ➔ Settings ➔ Sensor settings*

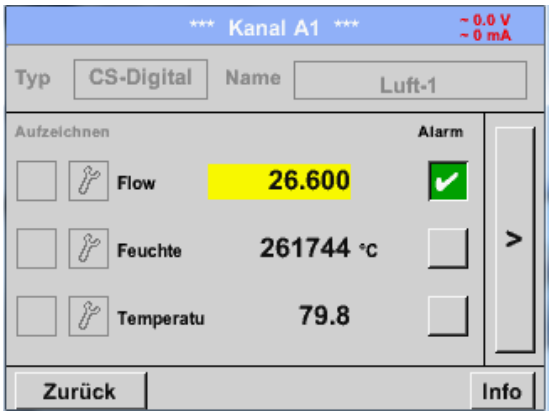
The channel indication flashes yellow for an *alarm-1* and red for an *alarm-2*.

Moreover, one can see which relays were set for which channel as an *alarm-1* and/or as an *alarm-2*.

This is indicated by the yellow and red or red/yellow squares at the intersections between measuring channel and relay.

This is an *alarm-1* for channel A1 and an *alarm-2* for channels A2 and B1!

Main menu ➔ Alarm overview ➔ A1



As with *Main menu ➔ Channels*, individual channels can be selected here.

In the *alarm overview*, it is quickly visible which measured value has exceeded or underrun the alarm range.

Note:

The alarm parameters can also be set and/or changed here.

14.9 Export data

With *export data,* recorded data can be transmitted to a USB stick.

Main menu ➔ Export data

With *Export logger data* and *Export system settings,* the recorded measuring data and the stored settings can be transmitted to a USB stick.

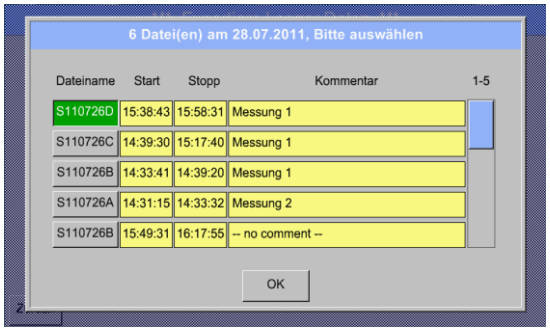
Main menu ➔ Export data ➔ Export logger data

By means of the *Selection* buttons, a period of time between *start* and *end* can be set. The stored measured data, which are within this period, are exported.

Main menu ➔ Export data ➔ Export logger data ➔ Selection

The selected date is always highlighted in green, and the date figures of the Sundays are red, as is the case in a calendar.

On days on which the measuring data were recorded, the date figures are optically raised.



When several measurements were recorded on the same day, these will appear subsequent to having selected the date with *OK*.

The desired record can easily be chosen now.

Main menu ➔ Export data ➔ Export logger data ➔ Exporting

The measuring data of the selected period are exported to a USB stick.

Main menu ➔ Export data ➔ Export system settings

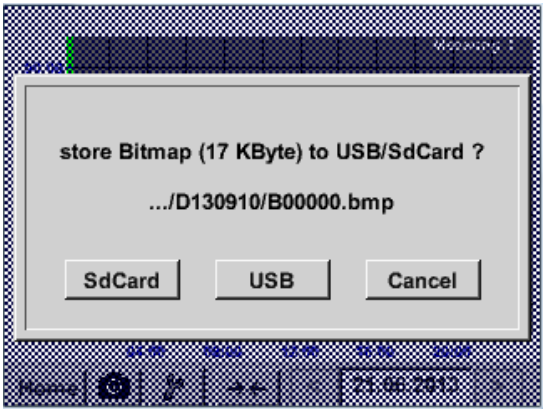
By means of *export system settings*, all the available sensor settings can be exported to a USB stick.

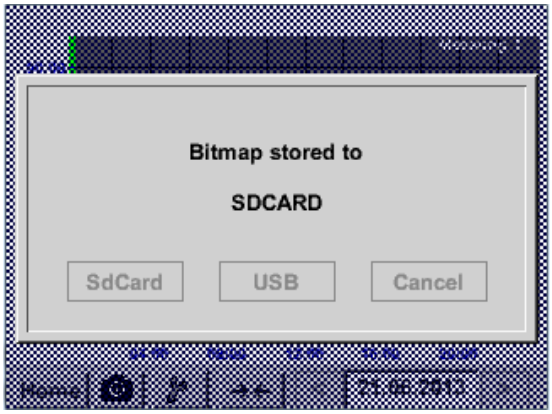
14.10 Screenshot function

By means of this function, a copy of the display in the menus graphics, graphics/current values, channels, and current values can be stored on a USB stick or SD card.

14.10.1 Storing the screenshot

Main menu ➔ Graphics ➔
Main menu ➔ Graphics/current values ➔
Main menu ➔ Channels ➔
Main menu ➔ Current values ➔





Here, the storage location USB stick or SD card can be selected.

The pictures are stored in a directory per day and are consecutively numbered.

Directory designation; DJJMMTT
D=fix(for the date)
JJ = Year
MM= Month
TT= Day

Path: DEV0002/Hostname/Bitmap
For the host name see
Main menu ➔Settings➔System overview
Example: first picture 10 September 2013
\\DEV0002/DE-4001/Bitmap/D130910/B00000.bmp

14.10.2 Exporting screenshots

The screenshots that are stored on the SD card can be exported to a USB stick.

Main menu ➔ Export data

With *Export screenshots,* the stored screenshots can be transmitted to a USB stick.

Main menu ➔ Export data ➔Export screenshots

By means of the *Selection* buttons, a period of time between *start* and *end* can be set. The stored bitmaps, which are within this period, are exported.

Main menu ➔ Export data ➔Export screenshots ➔ Selection

The selected date is always highlighted in green, and the date figures of the Sundays are red, as is the case in a calendar.

On days on which the measuring data were recorded, the date figures are optically raised.

The screenshots of the selected period of time are exported to a USB stick.

15 SD card and battery

For the storage and further processing of the recorded measuring results, there is an SD card slot inside the BDL housing.

An integrated battery (button cell) ensures the preservation of the configuration data of the METPOINT® BDL even in the event of a voltage drop.

DANGER!

Battery and SD card!

The replacement of the battery or of the SD card must only be carried out by authorised and skilled personnel, and when the device is deenergized.

Danger!

Damage through ESD possible

The device contains electronic components which may be sensitive to electrostatic discharge (ESD) or that may even be damaged by ESD.

Measures

For any servicing measures that require an open housing, the instructions regarding the prevention of electrostatic discharge in Chapter 10.1.1 need to be adhered to.

16 Cleaning/decontamination

Note:

The METPOINT® BDL has a cleaning function which protects the display against unintentional operation in the event of cleaning measures. Please refer to Chapter 14.3.5 for further information.

Cleaning of the METPOINT® BDL must be undertaken using a slightly damp (not wet) cotton cloth or one-way wipe, and mild, commercially available cleaner/soap.

For decontamination, spray the cleaner on an unused cotton cloth or one-way wipe, and wipe the component comprehensively. Effectuate subsequent drying using a clean cloth or via air drying.

In addition, the local hygiene provisions need to be observed.

Warning!

Damage possible!

A too high degree of humidity and hard and pointed objects, as well as aggressive cleaners, cause damage to the data logger and to the integrated electronic components.

Measures

- Never clean with a soaked cloth.
- Do not use aggressive cleaners.
- Do not use pointed or hard objects for cleaning.

17 Dismantling and disposal

Disposal in accordance with the WEEE Directive (Waste Electrical and Electronic Equipment):

The waste of electrical and electronic components (WEE) must not be disposed of in the waste containers intended for city refuse or household waste. At the end of its usability, the product must be disposed of in an appropriate manner. Materials such as glass, plastic and some chemical compositions are, for the most part, recoverable, reusable, and can be reutilized.

According to the aforementioned directive, the METPOINT® BDL comes under category 9 and is, according to §5, Law 1 (the German ElektroG), not affected by the substance prohibition of marketing. According to §9, Law 7 (ElektroG), the METPOINT® BDL from BEKO TECHNOLOGIES GmbH is taken back to be disposed of.

If the BDL compact is not returned to BEKO TECHNOLOGIES GmbH for disposal, it must be disposed of in accordance with waste code:

20 01 36 Used electrical and electronic devices with the exception of those which come under 20 01 21, 20 01 23, and 20 01 35.

Batteries must not be disposed of with the residual waste. They need to be delivered to suitable recycling centres or collecting points.

Warning!

Danger for persons and the environment!

Old appliances must not be disposed of with normal household waste!

Depending on the used medium, residues on the device may represent a danger to the operator or the environment. Therefore, undertake suitable protective measures and dispose of the device properly.

Measures:

Immediately clean the removed components from media residues when suitable protective measures cannot be undertaken.

18 Declaration of conformity

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EG-Konformitätserklärung

Wir erklären hiermit, dass die nachfolgend bezeichneten Produkte den Anforderungen der einschlägigen Richtlinien und technischen Normen entsprechen. Diese Erklärung bezieht sich nur auf die Produkte in dem Zustand, in dem sie von uns in Verkehr gebracht wurden. Nicht vom Hersteller angebrachte Teile und/oder nachträglich vorgenommene Eingriffe bleiben unberücksichtigt.

Produktbezeichnung:	**METPOINT® BDL compact**
Versorgungsspannung:	100 ... 240 V AC / 1Ph. / PE / 50-60Hz
IP-Schutzart:	IP 44
Umgebungstemperatur:	0 ... +50°C
Produktbeschreibung und Funktion:	Datenlogger zur stationären Messdatenerfassung und Speicherung, für industrielle Anwendungen.

Niederspannungs-Richtlinie 2006/95/EG

Angewandte Normen:	EN 61010-1:2010
Anbringungsjahr der CE-Kennzeichnung:	14

EMV-Richtlinie 2004/108/EG

Angewandte Normen:	EN 61326-1:2013, EN 61326-2-3:2013, EN 55011:2009+A1:2010

ROHS II-Richtlinie 2011/65/EU
Die Vorschriften der Richtlinie 2011/65/EU zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten werden erfüllt.

Die Produkte sind mit dem abgebildeten Zeichen gekennzeichnet:

CE

Neuss, 06.10.2014

BEKO TECHNOLOGIES GMBH

i.V. Christian Riedel
Leiter Qualitätsmanagement

Archiving: CE _ BDLc-878-1014-FP-A

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EC Declaration of Conformity

We hereby declare that the products indicated hereafter, in the delivered performance, comply with the stipulations of the relevant EU directives in force. This declaration only refers to products in the condition in which they have been placed into circulation. Parts which have not been installed by the manufacturer and / or modifications which have been implemented subsequently remain unconsidered.

Product designation:	**METPOINT® BDL compact**
Supply voltage:	100 … 240 V AC / 1Ph. / PE / 50-60Hz
IP degree of protection:	IP 44
Ambient temperature:	0 … +50 °C
Product description and function:	Data logger for storing and registration of stationary measurement data for industrial applications.

Low voltage directive 2006/95/EG

Applied standards:	EN 61010-1:2010
Year of fitting with CE mark:	14

EMV directive 2004/108/EG

Applied standards:	EN 61326-1:2013, EN61326-2-3:2013, EN 55011:2009+A1:2010

ROHSIIDirective2011/65/EU
The stipulation of the 2011/65/EU Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment are observed.

The products are labelled with the sign shown below:

CE

Neuss, 06.10.2014

BEKO TECHNOLOGIES GMBH

p.p. Christian Riedel

Head of Quality Department

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